APPENDIX I1

PRELIMINARY DRAINAGE STUDY

Heritage Valley Business Center
PPxxxx-xxx
City of Menifee, Riverside County, California

Preliminary Drainage Study

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Original Date Prepared: September 2024
Revision Date(s):



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ROMOLAND MDP
LINE-A AS-BUILTS

SECTION 1 - SUMMARY

PURPOSE

The purpose of this report is to document the hydrologic and hydraulic analyses performed in support of the Heritage Valley Business Center project located in the City of Menifee, County of Riverside, California. The project site is located north of Romoland Line-A, east of Sherman Road, and west of Trumble Road. The project proposes to build a distribution warehouse on approximately 41.2 total acres. This report summarizes the hydrologic and hydraulic analyses conducted to determine necessary drainage improvements for flood protection for the proposed building and safely convey runoff through the site.

The scope of this report will include the following:

- Determine the peak 100-year and 10-year flow rates for the developed condition using the Riverside County Flood Control and Water Conservation District (RCFC&WCD) Rational Method.
- Determine the required storm drain facilities, alignment, and sizes required to flood protect the project site.
- Determine the necessary underground chamber volume required to mitigate increased runoff.
- Preparation of a preliminary report summarizing the hydrology and hydraulic results.

DESCRIPTION OF WATERSHED

As previously described, the project is proposing a warehouse facility on approximately 41.2 net acres of vacant land with some residential housing.

The existing elevations across the site vary from 1432 at the easterly property line to 1427 at the westerly property line (NAVD88 datum). It is bound by Trumble Road to the west and Sherman Road to the east. The site currently slopes down at approximately 0.3% grade to the west. The existing drainage pattern for the site and the general area is characterized by sheet flows that follow the slope to the west.

The existing runoff from the site flows west until it is intercepted by a cutoff channel adjacent to the Interstate-215 off-ramp to Ethanac Road. Flow will ultimately reach and discharge into Romoland Line-A which drains into the San Jacinto River before finally reaching Canyon Lake and Lake Elsinore.

PROPOSED CONDITIONS

The project site will not be affected by offsite flows because Sherman Road will be constructed as part of a separate project known as the Menifee Commerce Center. Trumble Road will be improved along the frontage as part of this project. Line A-21 is planned to be built with this project. It is designed to accept flows from the properties located to the north of the project, properties to the south of Ethanac Road, and the street flows generated on Trumble Road. Line A-21 will drain into to Romoland MPD Line-A.

The onsite flows generated by the proposed project will be managed by a system of curb and gutters, ribbon gutters, and grated inlets. A storm drain system will then transport the flow into the site's underground chambers located within the western truck court. These chambers will detain the water quality volume and HCOC mitigation volume. The flows will be pumped into a proposed Filterra unit for biotreatment before being conveyed into proposed Line CP-1, a 60-inch diameter storm drain. This storm drain will discharge into Romoland MDP Line-A.

The project site is in an HCOC nonexempt area. However, since all the downstream drainage facilities are constructed and frequently maintained by RCFC then the project will only need to mitigate for HCOC. The 2-year, 24-hour storm will be mitigated down to existing conditions and routed to match existing flowrates. The flows will be routed by storing the volume in the underground chambers and

pumping at a rate to meet drawdown requirements. The required retention volume for mitigation is 164,483 ft^3. All high flows will by-pass the pump station and gravity flow into proposed Line CP-1 and into Romoland MDP Line-A.

METHODOLOGY

HYDROLOGY

Hydrologic calculations were performed in accordance with the RCFC&WCD Hydrology Manual, dated April 1978. The Rational Method was utilized in determining peak flow rates and preliminary sizing of pipes.

The hydrological parameters, including rainfall values and soil types were derived from NOAA Atlas 14 data and the RCFC&WCD Hydrology Manual. The isohyetal maps and soil map have been included in Section 2.

Rational Method calculations were performed using a computer program developed by CivilDesign Corporation and Joseph E. Bonadiman and Associates Inc. The computer program is commonly referred to as CivilD which incorporates the hydrological parameters outlined in the RCFC&WCD Hydrology Manual.

The Rational Method was used to determine the peak flow rates to size and design the drainage facilities need to convey onsite flows through the sites to the proposed basins. The flow rates were computed by generating a hydrologic "link-node" model in which the overall area is divided into separate drainage sub-areas, each tributary to a concentration point (node) determined by the proposed layout and grading.

The Unit Hydrograph Method was used to determine the peak flow rates and volumes associated with the 100-year storm events for the site. Calculations were performed for both the existing condition and developed condition to be used in the analysis of the proposed basin. See Section 2 for additional information and results regarding the hydrologic analyses performed for this project.

HYDRAULICS

Water quality calculations were performed using spreadsheets that were created by RCFC&WCD. Preliminary calculations and additional details can be found in the PWQMP.

Basin routing calculations were performed using the CivilD computer program. The CivilD program utilizes the Modified-Puls methodology to routes unit hydrographs through a basin using the stage-storage and stage-discharge curves determined from the proposed basin design. See Section 3 for additional discussion and results.

FIG. 1 VICINITY MAP

FIG. 2 USGS TOPOGRAPHY MAP

FIG. 3 AERIAL PHOTOGRAPH

FIG. 4 RECEIVING WATERBODIES

FIG. 5 SOILS MAP

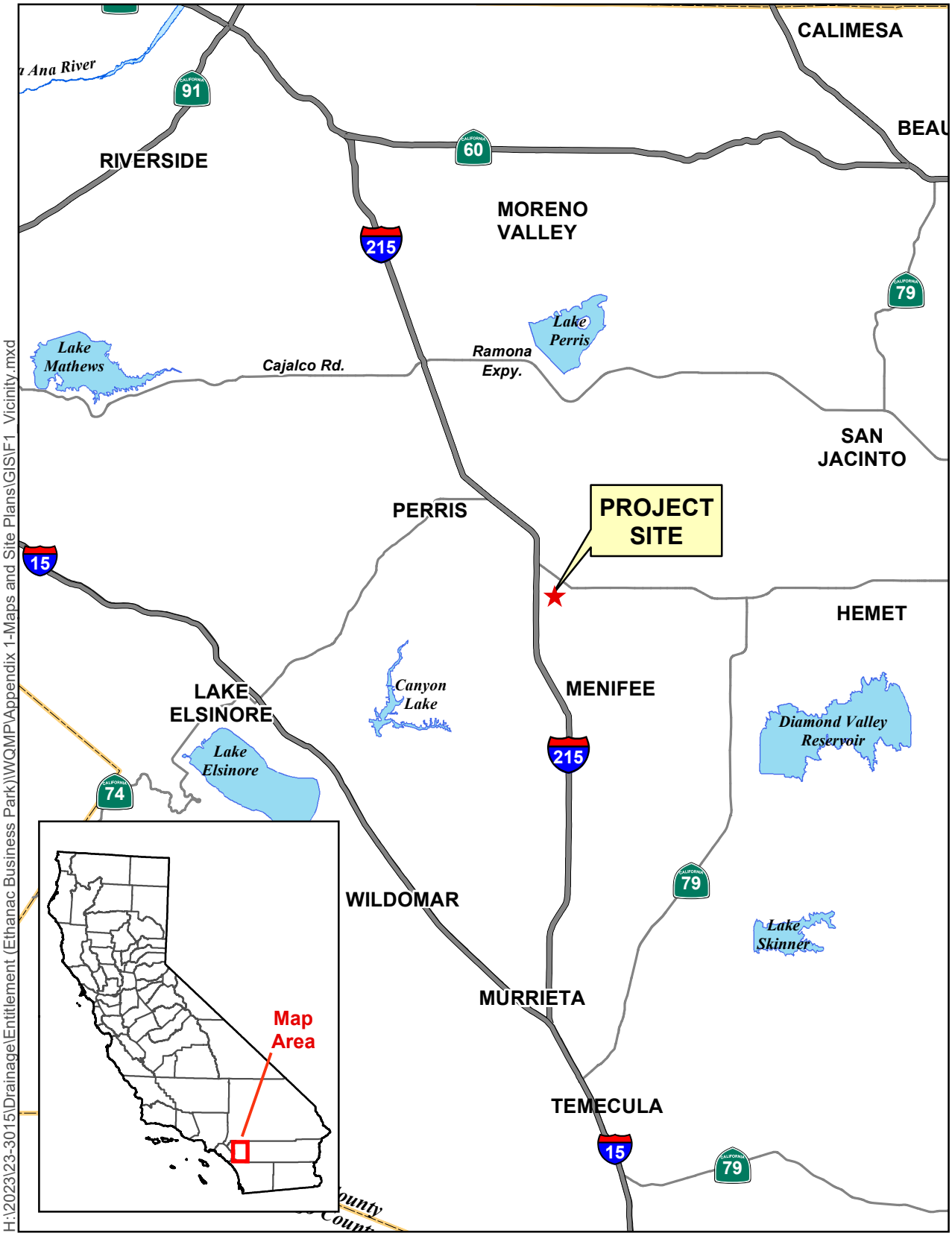
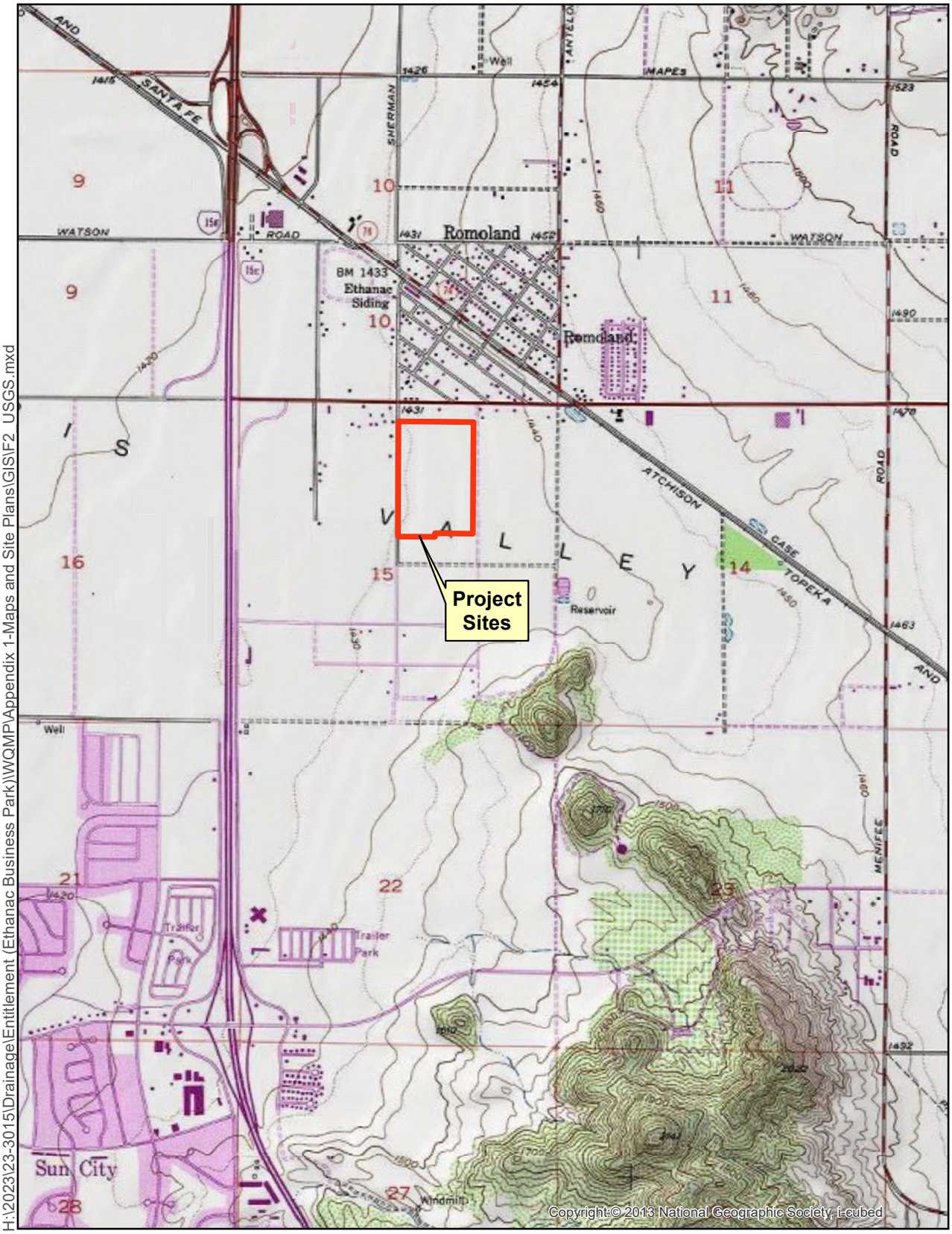


Figure 1. Vicinity Map



H:\2023\23-3015\Drainage\Entitlement (Ethanac Business Park)\WQMP\Appendix 1-Maps and Site Plans\GIS\F2_USGS.mxd

Sources: ESRI / USGS 7.5min Quad
DRGs: MENIFEE

Figure 2. USGS Topography Map

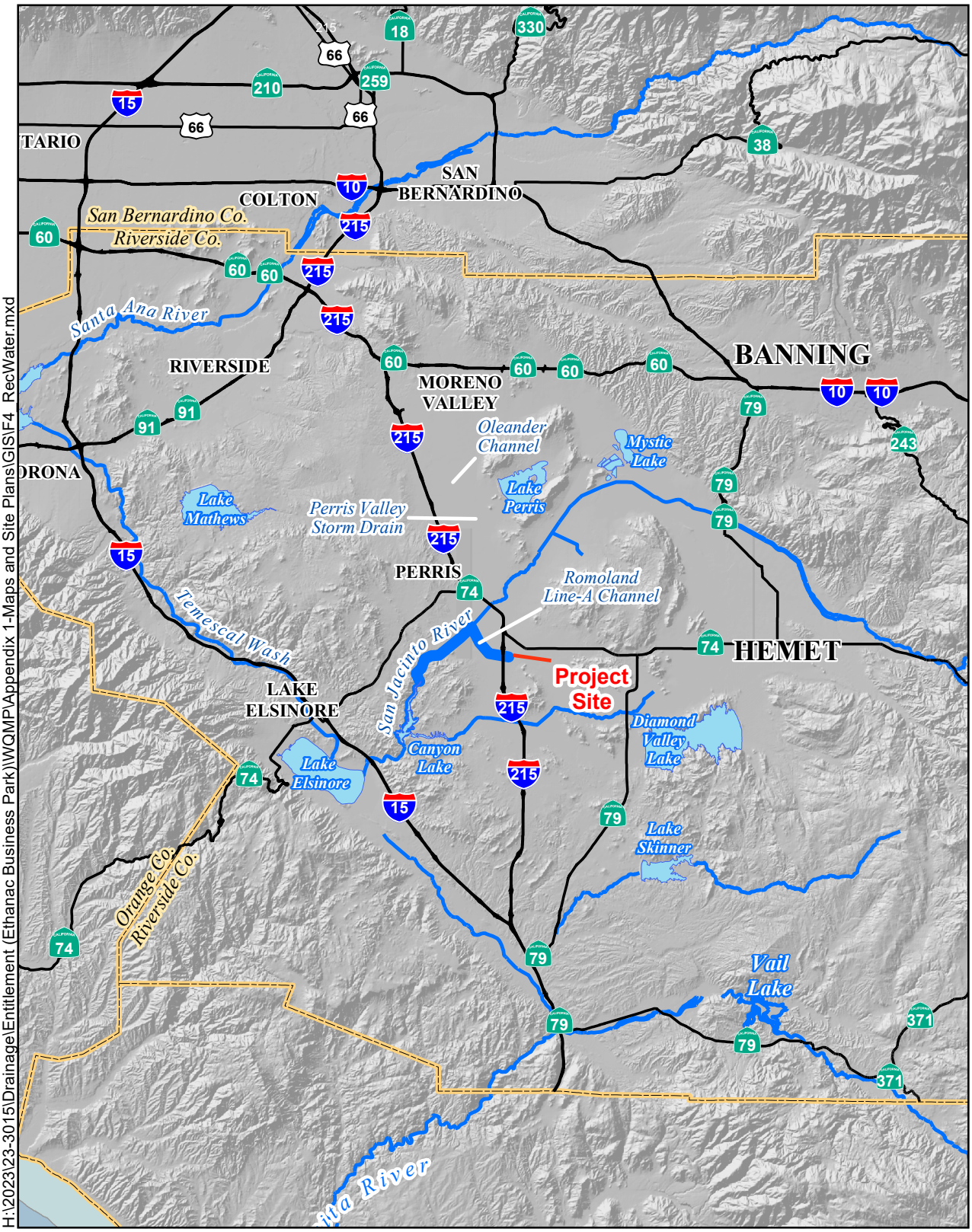
0 1,000 2,000
Feet



Sources: County of Riverside GIS, 2013; Eagle Aerial, April 2016.

Figure 3. Aerial Photograph

0 400 800 Feet



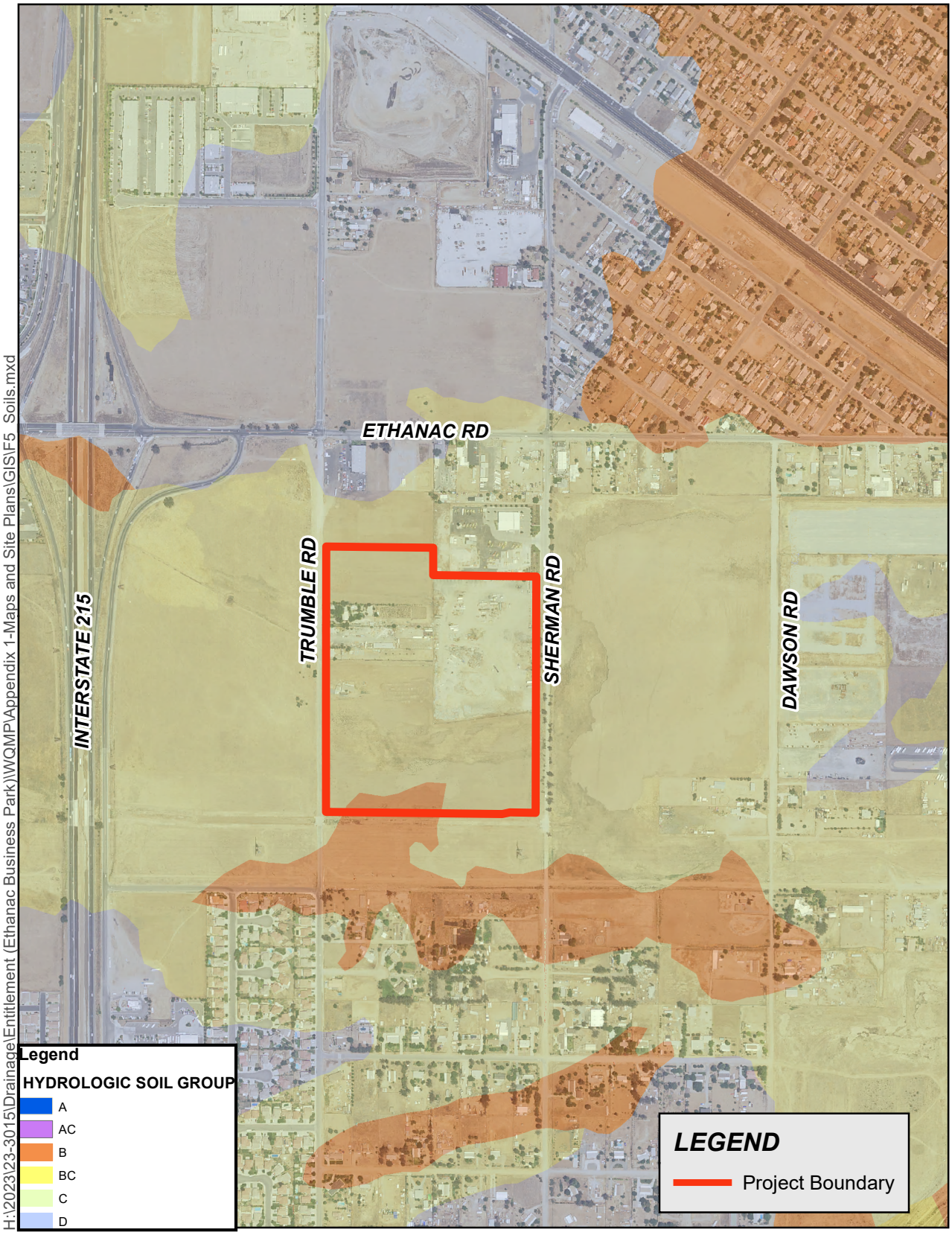
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Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies

Flowpath

0 2 4 6
Miles



H:\2023\23-3015\Drainage\Entitlement (Ethanac Business Park)\WQMP\Appendix 1-Maps and Site Plans\GIS\F5 Soils.mxd

Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.30

Figure 5. Soils Map

SECTION 2 - HYDROLOGY ANALYSIS

HYDROLOGY PARAMETERS

The RCFC&WCD Hydrology Manual was used to determine several of the hydrological parameters; see Appendix A for all data used in the analysis. The following rainfall depths were utilized in the hydrology analyses, which were obtained from the standard intensity-duration curve and the isohyetal maps from the manual:

Table 1 – Precipitation Values

	Duration
Storm Event	1-Hour (inches)
2-Year	0.50
100-Year	1.30

The value for the slope of intensity was determined to be 0.50 from Plate D-4.6 from the RCFC&WCD Hydrology Manual.

Based on the Plate C-1.42 (Romoland) in the RCFC&WCD Hydrology Manual, the project site is classified as soil type C with a small percentage of Type B. The entire site was considered as Class C to be conservative. The soils map is included in Appendix A.

The cover type was determined based on the existing land cover and proposed land use of the site. Hydrological computations for the existing condition were done using 'Undeveloped – Poor Cover'. The residential\commercial landscaping cover type was used to represent the developed condition.

Table 2 below summarizes the runoff index values and the recommended values for percentage of impervious cover for each category:

Table 2 – Cover Type

Cover Type	Soil Group A	Soil Group B	Soil Group C	Soil Group D	Percentage of Impervious Cover
Undeveloped Poor Cover	67	78	86	89	10%
Commercial Landscaping	32	56	69	75	90%

ONSITE RATIONAL METHOD HYDROLOGY

The rational method was utilized to calculate peak flow rates for sizing the required drainage improvements to effectively manage on-site flows to the proposed underground chambers. The project site was divided into 12 subareas.

Sub-Areas 1-7 (see Hydrology Map in Appendix A) will drain into low points along the east and south side of the proposed building. A total flow of 54.9 cfs will be conveyed by the storm drain Line-A which will discharge the flow into the proposed underground chambers.

Sub-Area 8 will surface flow to a low point at the southwest corner of the project site. The 0.5 acres will generate 2.0 cfs that will be conveyed into Line-E and down to the underground chambers.

Sub-Areas 9 and 10 will both surface flow to low points at the northwest corner of the project site and into Line-B within the trailer parking stalls and drive aisle to collect 14.9 cfs and 10.3 cfs from Area-10 and A-9 respectively. The runoff will collected in grated inlets and discharged into the proposed underground chambers.

Sub-Area 11 will surface flow to the central low point in the west truck court. The 3.9 acres will generate 11.1 cfs that will be conveyed into Line-C and down to the underground chambers.

Sub-Area 12 will surface flow to the southern low point in the west truck court. The 5.1 acres will generate 14.6 cfs that will be conveyed into Line-D and down to the underground chambers.

A peak 100-year flow rate of 91.8 cfs is generated by the site. During an emergency, the runoff will bypass the proposed pump and flow into Line CP-1, which is capable of handling the peak 100-year flow rate.

The following table summarizes the rational method results at key points:

Table 3 – Rational Method Results

Point of Interest	10-Year Peak Flow Rate (cfs)	100-Year Peak Flow Rate (cfs)
Node 107 – Line-A Storm Drain Sub-Area-1 to Area-7	34.4	54.9
Node 110 – Line-E Storm Drain Sub-Area-8	1.3	2.0
Node 112 – Line-B Storm Drain Sub-Area-9 to Area-10	15.9	25.2
Node 114 – Line-C Storm Drain Sub-Area-11	7.0	11.1
Node 115 – Line-D Storm Drain Sub-Area-12	9.3	14.6
Peak Flow Rate for Total Project Site	57.4	91.8

The rational method output files and hydrology map have been included in Appendix A.

ONSITE UNIT HYDROGRAPH METHOD HYDROLOGY

The unit hydrograph method was used to determine the peak flow rates and volumes in order to adequately size the proposed underground chambers to address HCOC. Unit hydrographs were performed for both the existing condition and the developed condition. The existing condition is used to establish a baseline for comparative purposes. The developed condition is used for design purposes, it was utilized in the basin routing analysis in order to size and analyze the proposed basins. The following table summarizes the results of the unit hydrograph analysis:

Table 4 – Unit Hydrograph Results

	Existing Condition		Proposed Condition	
Storm Event	Volume (Ac-ft)	Peak Flow (cfs)	Volume (Ac-ft)	Peak Flow (cfs)
2-Year, 24-Hour	0.803	1.3	4.504	7.4

The unit hydrograph output files and hydrology map have been included in Appendix A.

SECTION 3 - HYDRAULIC ANALYSIS

ONSITE STORM DRAIN FACILITIES

The project proposes subsurface storm drains and will utilize curb and gutter, ribbon gutters, and grate inlets to convey onsite flows to the underground chambers. A summary of each system has been provided. The sizes of the storm drain systems were preliminarily sized using the results from the rational method analysis.

The size of the onsite storm drain will be confirmed during the final design when a detailed hydraulic analysis is completed for the project.

Line-A (Onsite)

The eastern portion of the project site will surface flow and be collected by Line-A. Line-A, is a 24-inch diameter HDPE storm drain upstream that transitions into a 48-inch diameter HDPE storm drain downstream. Line-A proposes to convey the 100-year peak flow rate into the underground chambers. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-A. A hydraulic model for Line-A and its laterals will be provided during final engineering to further assess the storm drain design.

Line-B (Onsite)

The northwest portion of the project site will surface flow into two low points and be collected by Line-B. Line-B, is a 24-inch diameter HDPE storm drain that transitions into a 36-inch diameter HDPE storm drain. Line-B proposes to convey the 100-year peak flow rate to the underground chambers. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-B. A hydraulic model for Line-B will be provided during final engineering to further assess the storm drain design.

Line-C (Onsite)

The center-west portion of the project site will surface flow to a low point and be collected by Line-C. Line-C, is a 24-inch diameter HDPE storm drain. Line-C proposes to convey the 100-year peak flow rate to the underground chambers. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-C. A hydraulic model for Line-C will be provided during final engineering to further assess the storm drain design.

Line-D (Onsite)

The southwest portion of the project site within the truck court will surface flow to a low point and be collected by Line-D. Line-D, is a 24-inch diameter HDPE storm drain. Line-D proposes to convey the 100-year peak flow rate to the underground chambers. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-D. A hydraulic model for Line-D will be provided during final engineering to further assess the storm drain design.

Line-E (Onsite)

The southwest portion of the project site will surface flow to a low point and be collected by Line-E. Line-E, is an 18-inch diameter HDPE storm drain. Line-E proposes to convey the 100-year peak flow rate to the underground chambers. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-E. A hydraulic model for Line-E will be provided during final engineering to further assess the storm drain design.

Line-CP-1 (Onsite)

All of the project's runoff will exit the property with Line CP-1. Line-CP-1 is a 60-inch diameter HDPE and RCP storm drain. Line-CP-1 proposes to convey the 100-year peak flow rate from the underground

chambers into Romoland MDP Line-A. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line-CP-1. A hydraulic model for Line-CP-1 will be provided during final engineering to further assess the storm drain design.

Flapgate Manhole

A flapgate manhole will be located near the property line within Line CP-1 to prevent a backwater condition from Romoland MDP Line-A since the HGL at the proposed connection is around 1428.1.

Filterra/Pump Station

A Filterra unit is used for water quality treatment as recommended in the Preliminary Water Quality Report. The Filterra unit will accept the pump flows of 1.0 cfs and treat the stormwater.

OFFSITE STORM DRAIN FACILITIES

As part of this project, Trumble Road, will be improved/constructed. Line A-21 is designed using MDP flowrates for Romoland MDP Line-A. The 100-year water surface elevation in Line-A is around 1426.6 at Trumble. Because of this, hydraulic conditions in the storm drains may require additional analysis than what is preliminarily proposed.

Line A-21 (Trumble Road)

Line A-21 will collect runoff from the area east of Trumble, west of Sherman, and between Ethanac and Romoland Line-A, excluding the project site boundary as it has its own connection into Romoland MDP Line-A. Line A-21 will be a 48-inch diameter RCP and convey a 100-year flowrate of roughly 53 cfs. A normal depth calculation was used in the CivilD estimate pipe size function to determine the appropriate size for Line A-21. A hydraulic model for Line A-21 will be provided during final engineering to further assess the storm drain design

BASIN ROUTING ANALYSIS

The project proposes a dual-purpose underground chamber system. This system will store 77,600 ft3 of stormwater to address water quality as outlined in the Preliminary Water Quality Management Plan (P-WQMP). Additionally, it will function as a detention system to control project outflows and address HCOC mitigation for the 2-year 24-hour storm event withholding the incremental volume of 3.776 acre-ft or 164,483 ft3. All other storm events will outflow into Line CP-1.

A pump station is planned to manage outflow from the project site and ensure that the water quality volume is treated in the underground chambers before being pumped into the Filterra unit for biotreatment. The outflow will be limited using a pump rate of 1.0 cfs to address HCOC mitigation. The flow from the Filterra unit will discharge into Line CP-1, which will also serve as an emergency escape path for project runoff.

The outflow of Line CP-1 was determined through an iterative process. A hydraulic model was created based on the assumption of free flow and a normal depth as the initial HGL, a slope of 0.003 ft/ ft and a diameter size of 60''. The hydraulic model was run using different peak flowrates, which gave the water surface elevation in the underground chambers for that particular flowrate. For example, a flowrate of 40 cfs was used and it resulted in an HGL of 1425.1 From the underground chamber stage-storage table, the volume at 1425.1 was used in acre-feet. This allowed us to create the stage-storage-discharge table using an iterative process. Refer to Appendix B for the stage-storage-discharge table.

A routing analysis was completed to show that the underground chambers have the necessary volume to address HCOC requirements. Data on underground chamber system storage and outflow at various stages was analyzed and provided in Appendix B, along with all routing results. The results of the routing analysis are presented in the table to demonstrate that the underground chambers have the necessary storage volume to address HCOC mitigation.

Table 5 – Basin Routing Results

	Existing Condition		Proposed Condition		Basin Routing Results		
Storm Event	Volume (AC-ft)	Peak Flow (cfs)	Volume (AC-ft)	Peak Flow (cfs)	Peak Flow (cfs)	Maximum Basin Depth (feet)	Water Surface Elevation
2-Year, 24-Hour	0.803	1.3	4.504	7.4	1.4*	4.52	1422.41

*The 2-year, 24-hour outflow cannot exceed 10% of the existing condition flow rate

The basin routing calculations and other hydraulic calculations have been provided in Appendix B.

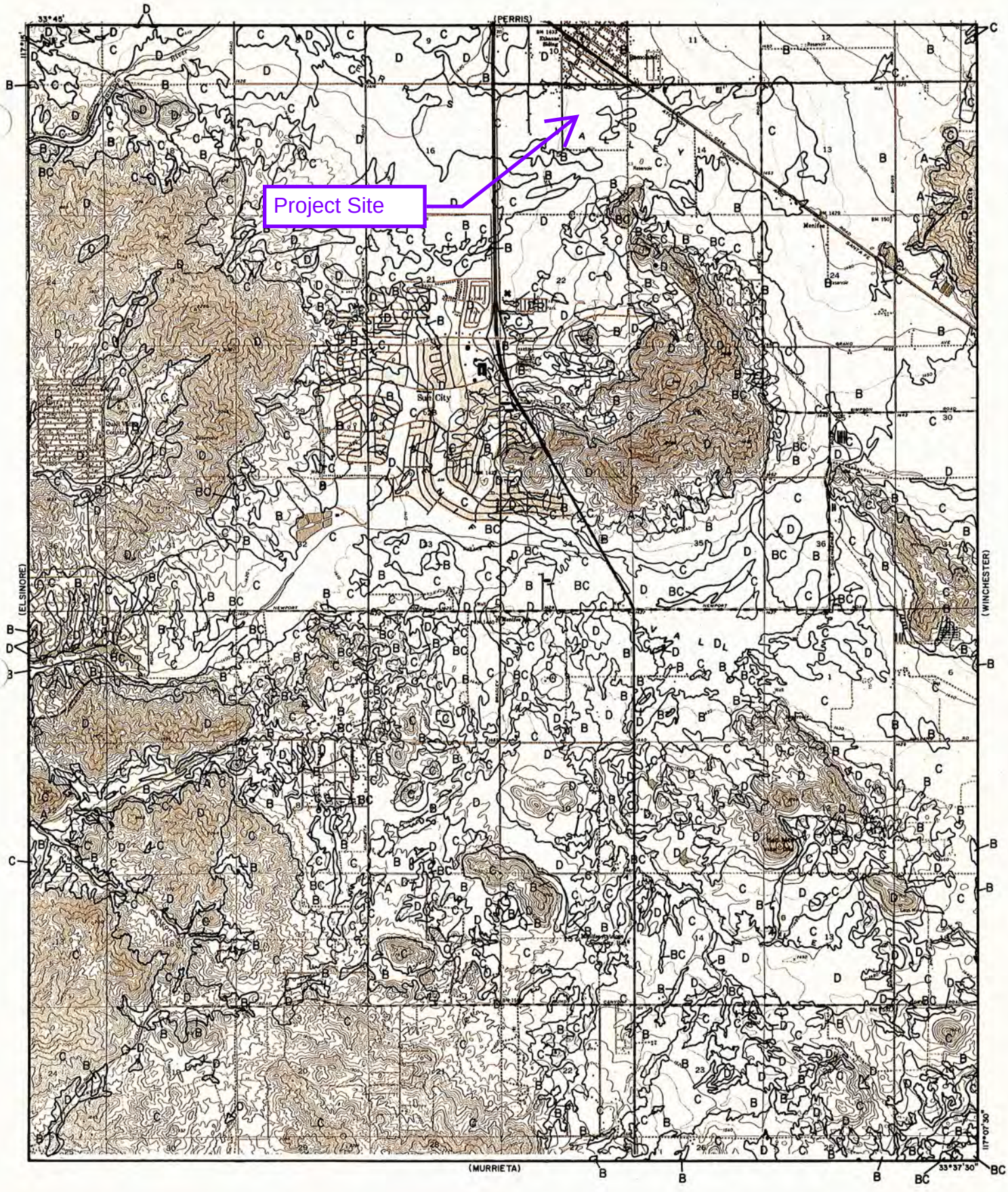
SECTION 4 - CONCLUSION

Based on the analyses and results of this report, the following conclusions were derived from the hydrology and hydraulic results:

- The proposed drainage improvements will adequately convey flows to the basins and Romoland Line-A while providing flood protection for the 100-year storm event.
- The proposed basins will provide adequate volume to mitigate for HCOC.
- The proposed project will not impact flooding condition to upstream or downstream properties.

APPENDIX A – HYDROLOGY

HYDROLOGIC SOILS GROUP MAP (PLATE C-1.42)



LEGEND

SOILS GROUP BOUNDARY

A SOILS GROUP DESIGNATION

RCFC & WCD

HYDROLOGY MANUAL

0 FEET 5000

HYDROLOGIC SOILS GROUP MAP FOR ROMOLAND

PLATE C-1.42

HYDROLOGICAL PARAMETERS

PROJECT SITE
2YR-1HR=0.5"

NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 1-HOUR
PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: R.A.S.	SHEET No.
DATE	PLATE D-4.3	DR. No.

REVISED:

PROJECT SITE
2YR-3HR=0.8"

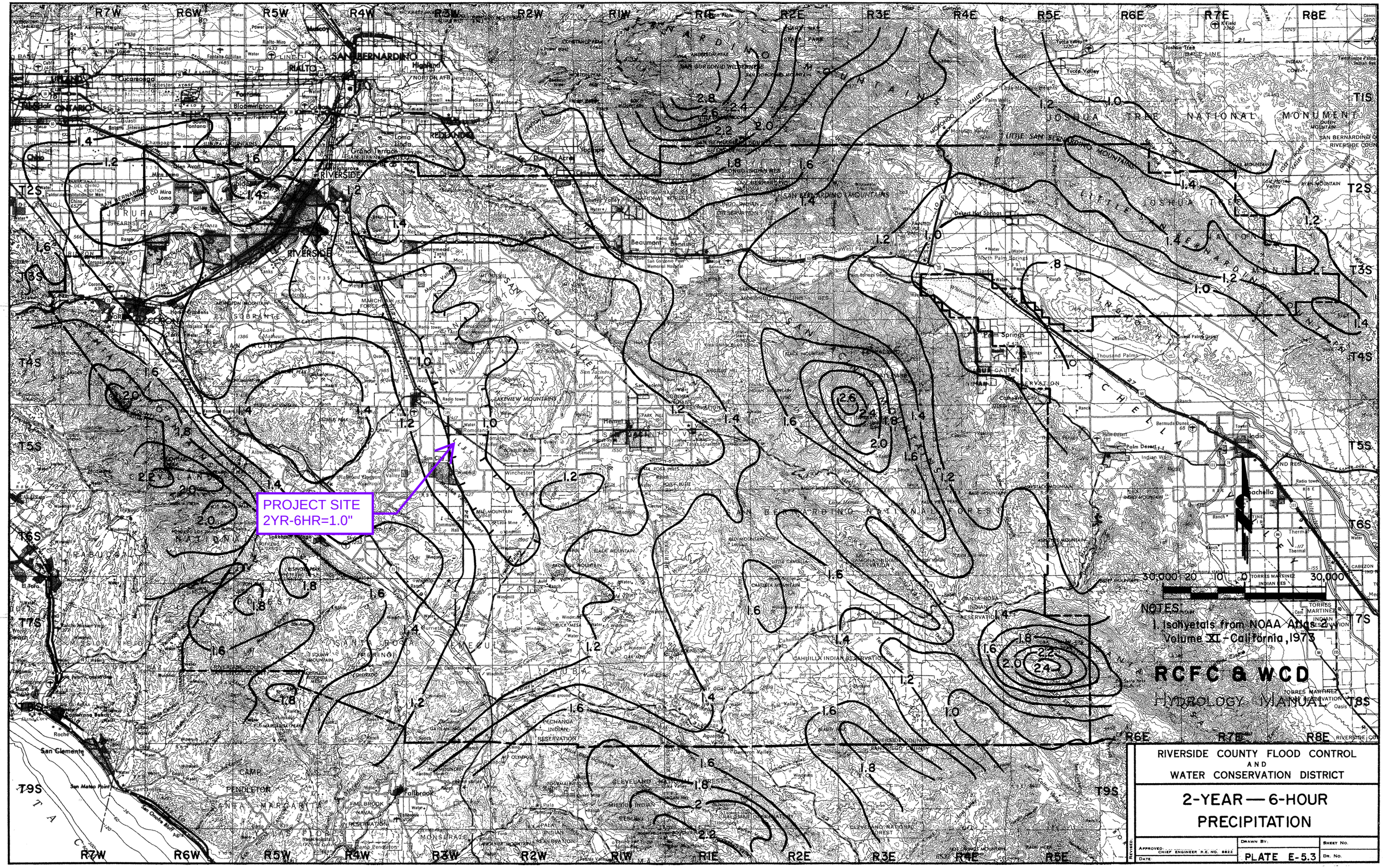
NOTES:
1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 3-HOUR
PRECIPITATION

APPROVED: CHIEF ENGINEER R.E. NO. 6822	DRAWN BY: R.A.S.	SHEET NO.
DATE:	PLATE E-5.1	DR. NO.


PROJECT SITE
2YR-6HR=1.0"
NOTES
1. Isohyetals from NOAA Atlas 2
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
2-YEAR — 6-HOUR
PRECIPITATION
PLATE E-5.3
SAN BERNARDINO
RIVERSIDE
RIALTO
REDLANDS
MORENO VALLEY
PERRIS
HEMET
SAN JACINTO
BANNING
BEAUMONT
CALIMESA
LAKE ELSINORE
CANYON LAKE
MURRIETA
TEMECULA
WILDOMAR
LAKE MATHEWS
LAKE PERRIS
LAKE SKINNER
SAN JACINTO MOUNTAINS
SAN BERNARDINO MOUNTAINS
SANTA ROSA MOUNTAINS
JOSHUA TREE NATIONAL MONUMENT
LITTLE SAN BERNARDINO MOUNTAINS
PALM SPRINGS
CATHEDRAL CITY
RANCHO MIRAGE
PALM DESERT
INDIO
COACHELLA
LA QUINTA
DESERT HOT SPRINGS
YUCCA VALLEY
TWENTYNINE PALMS
SAN JACINTO WILDERNESS
SAN GORGONIO WILDERNESS
SAN JACINTO RIVER
SANTA ANA RIVER
SAN GABRIEL MOUNTAINS
SAN JACINTO FAULT
SAN ANDREAS FAULT
SAN JACINTO VALLEY
SAN TIMOTEO CANYON
SAN GORGONIO PASS
MORONGO INDIAN RESERVATION
SOBOBA INDIAN RESERVATION
AGUA CALIENTE INDIAN RESERVATION
CABAZON INDIAN RESERVATION
TORRES MARTINEZ INDIAN RESERVATION
SANTA ROSA INDIAN RESERVATION
AUGUSTINE INDIAN RESERVATION
CAHUILLA INDIAN RESERVATION
CAMP PENDLETON
SAN MATEO POINT
SAN CLEMENTE
SAN ONOFRE BLUFF
TEMECULA CANYON
SANTA MARGARITA
SAN LUIS REY
SAN DIEGO COUNTY
ORANGE COUNTY
RIVERSIDE COUNTY
R7W R6W R5W R4W R3W R2W R1W R1E R2E R3E R4E R5E R6E R7E R8E
T9S T8S T7S T6S T5S T4S T3S T2S T1S

PROJECT SITE
2YR-24HR=1.6"

NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

2-YEAR — 24-HOUR
PRECIPITATION

APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: R.A.S.	SHEET NO.
DATE	PLATE E-5.5	DR. NO.
REVISED		

PROJECT SITE
100YR-1HR=1.3"

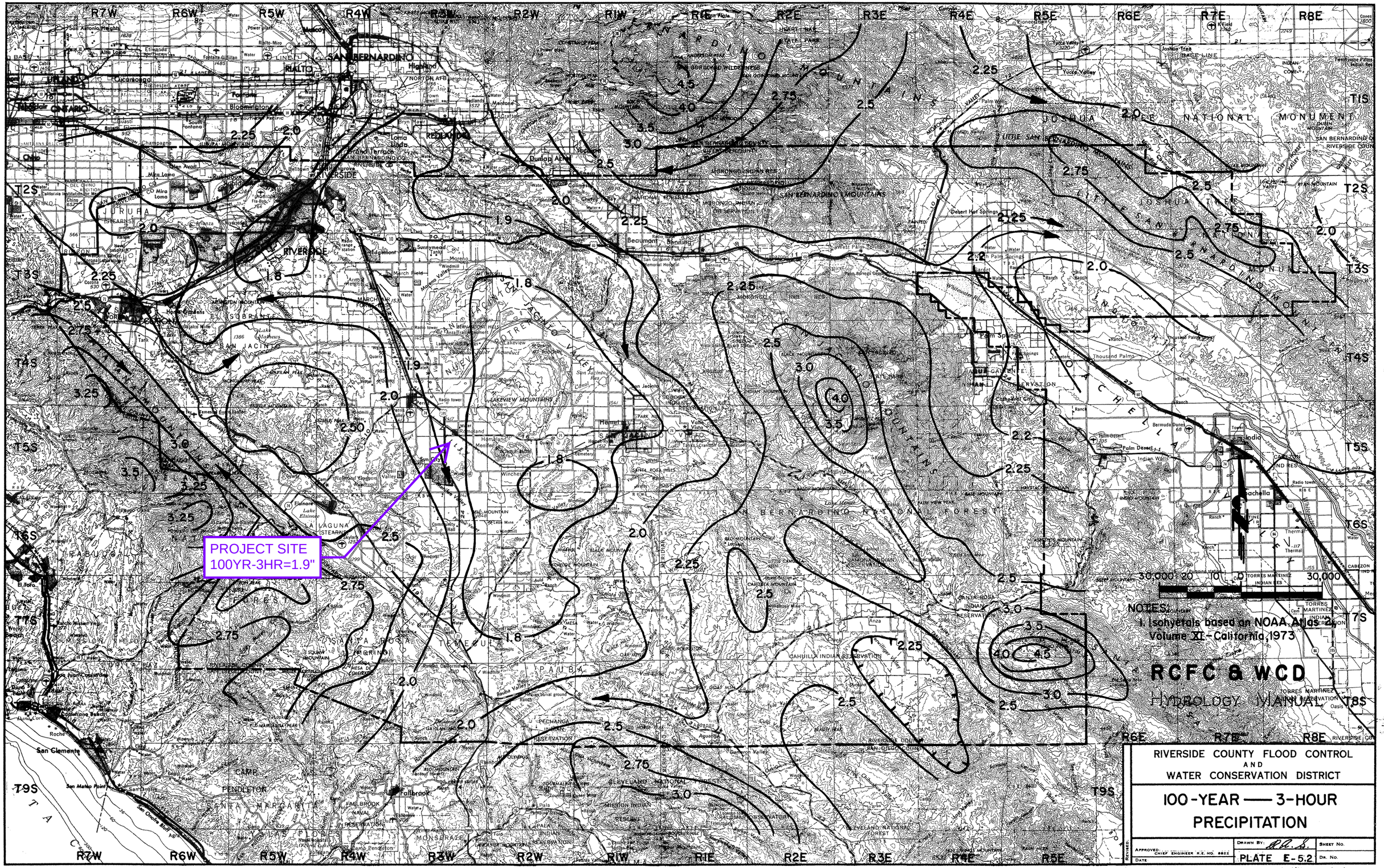
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1. Isohyetals based on NOAA Atlas 2, Volume XI - California, 1973

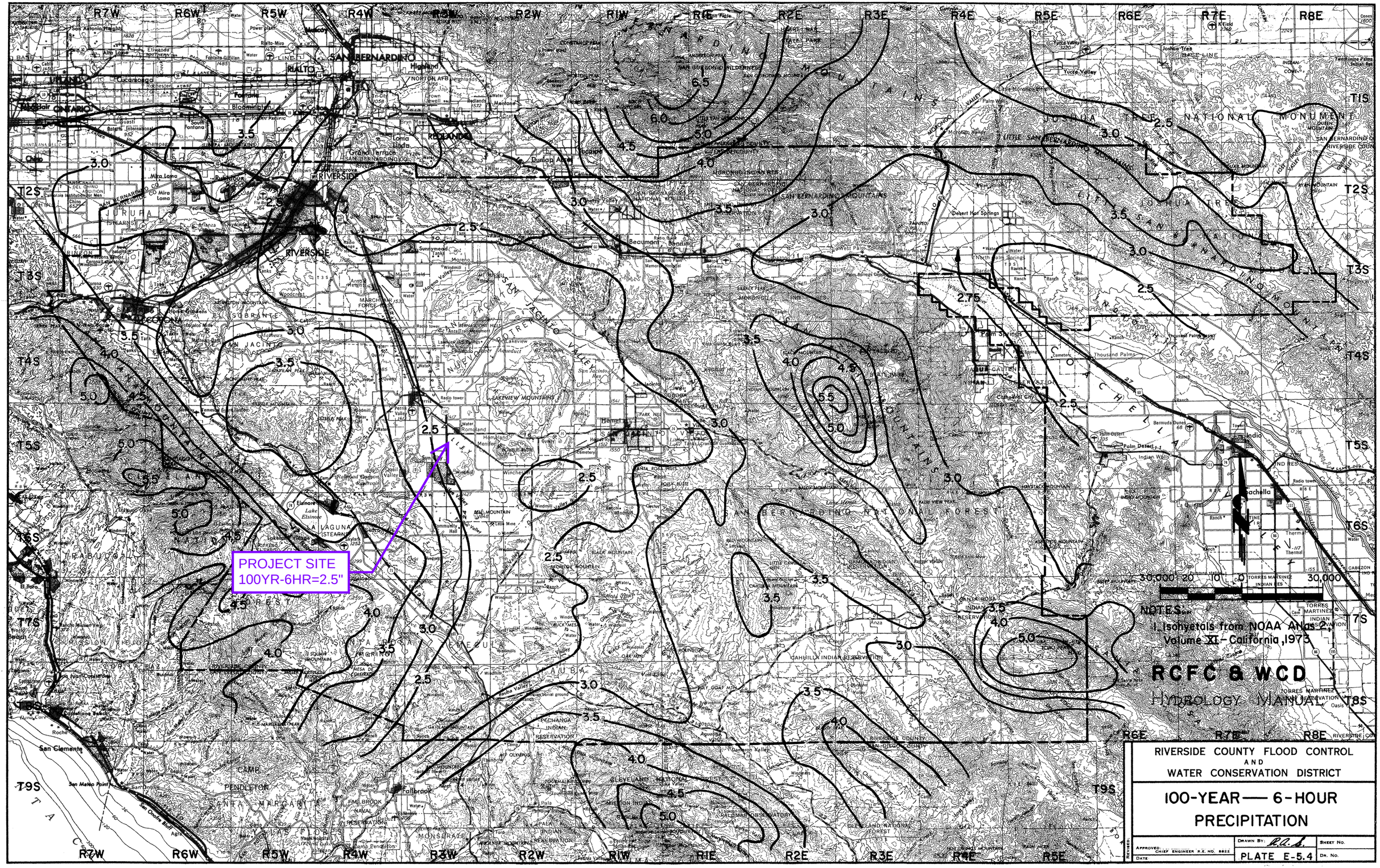
RCFC & WCD
HYDROLOGY MANUAL

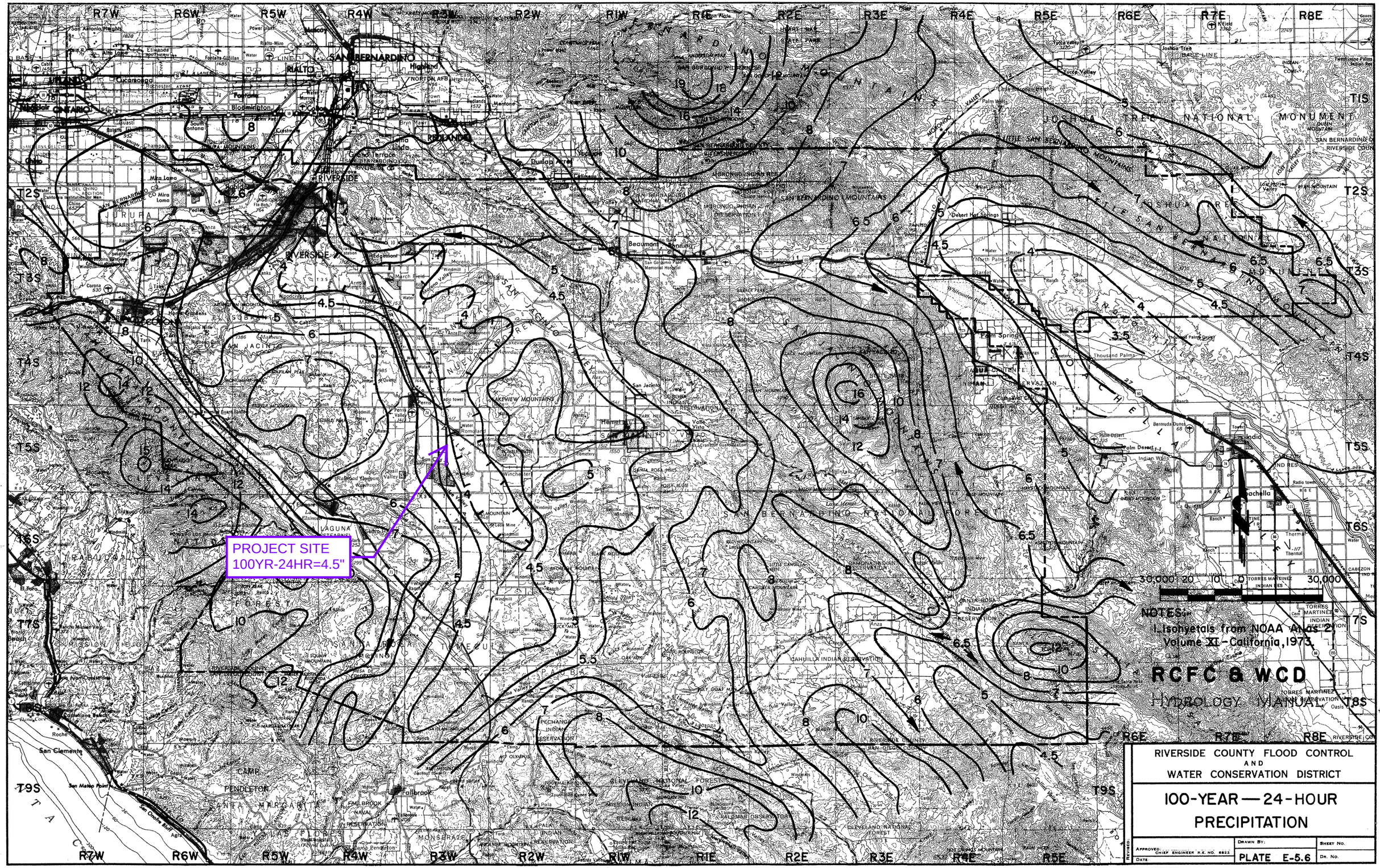
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

100-YEAR — 1-HOUR PRECIPITATION

APPROVED: CHIEF ENGINEER R.E. NO. 6822
DATE
REVISED
DRAWN BY: A.A.S.
SHEET NO.
PLATE D-4.4
DR. NO.


PROJECT SITE
100YR-3HR=1.9"
NOTES:
1. Isohyetals based on NOAA Atlas 2
Volume XI - California, 1973
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT
100-YEAR — 3-HOUR
PRECIPITATION
PLATE E-5.2
SAN BERNARDINO MOUNTAINS
SAN JACINTO MOUNTAINS
SANTA ROSA MOUNTAINS
LITTLE SAN BERNARDINO MOUNTAINS
JOSHUA TREE NATIONAL MONUMENT
SAN JACINTO FAULT
SAN ANDREAS FAULT
SAN JACINTO VALLEY
TEMECULA
PAUBA
SANTA MARGARITA
LAGUNA
TRABUCO
MISSION VIEJO
SAN CLEMENTE
CAMP PENDLETON
SAN ONOFRE BLUFF
SAN MATEO POINT
SAN DIEGO COUNTY
RIVERSIDE COUNTY
SAN BERNARDINO COUNTY
ORANGE COUNTY
RIVERSIDE
SAN BERNARDINO
RIALTO
COLTON
REDLANDS
LOMA LINDA
MORENO VALLEY
PERRIS
HEMET
SAN JACINTO
CORONA
NORCO
LAKE ELSINORE
LAKE MATHEWS
LAKE PERRIS
LAKE SKINNER
LAKE HEMET
LAKE ELSMORE
MURRIETA
TEMECULA
FALLBROOK
VISTA
SAN CLEMENTE
DANA POINT
MISSION VIEJO
LAGUNA NIGUEL
LAGUNA HILLS
LAGUNA BEACH
TRABUCO CANYON
ETIWANDA
FONTANA
RANCHO CUCAMONGA
UPLAND
CLAREMONT
POMONA
ONTARIO
MONTCLAIR
CHINO
CHINO HILLS
NORTON AFB
MARCH FIELD
DUNLAP AFB
BEAUMONT
BANNING
CABAZON
DESERT HOT SPRINGS
PALM SPRINGS
CATHEDRAL CITY
RANCHO MIRAGE
PALM DESERT
INDIAN WELLS
LA QUINTA
INDIO
COACHELLA
THERMAL
MECCA
NORTH SHORE
OASIS
TORRES MARTINEZ INDIAN RESERVATION
MORONGO INDIAN RESERVATION
AGUA CALIENTE INDIAN RESERVATION
CAHUILLA INDIAN RESERVATION
SANTA ROSA INDIAN RESERVATION
PECHANGA INDIAN RESERVATION
MISSION INDIAN RESERVATION
SAN MANUEL INDIAN RESERVATION
SAN GORGONIO PASS
MORONGO VALLEY
YUCAIPA
YUCCA VALLEY
TWENTYNINE PALMS
JOSHUA TREE
SAN GORGONIO MOUNTAIN
SAN JACINTO PEAK
SAN GABRIEL MOUNTAINS
CLEVELAND NATIONAL FOREST
SAN BERNARDINO NATIONAL FOREST
SAN JACINTO WILDERNESS
SAN GORGONIO WILDERNESS
SANTA ROSA WILDERNESS
SAN JACINTO PEAK
SAN GORGONIO MOUNTAIN
SANTIAGO PEAK
MOUNT PALOMAR
LAKEVIEW MOUNTAINS
SANTA ROSA HILLS
BOX SPRINGS MOUNTAINS
REEDS GAP
CAJON PASS
SAN GABRIEL RIVER
SANTA ANA RIVER
SANTA MARGARITA RIVER
SAN LUIS REY RIVER
SAN DIEGUITO RIVER
SAN JACINTO RIVER
TEMECULA CREEK
MURRIETA CREEK
SAN JUAN CREEK
TRABUCO CREEK
AGUANGA
DAMRON VALLEY
PECHANGA
GAVILAN
HEMET
SAN JACINTO
MENIFEE
WINCHESTER
ROMOLAND
PERRIS
MORENO
EDGEMONT
SUNNYMEAD
HIGHGROVE
GLEN AVON
MIRA LOMA
JURUPA
EASTVALE
NORCO
CORONA
EL TORO
LAGUNA CANYON
ALISO CREEK
SAN JUAN CAPISTRANO
DANA POINT
SAN CLEMENTE
CAMP PENDLETON
OCEANSIDE
FALLBROOK
VISTA
ESCONDIDO
SAN MARCOS
CARLSBAD
ENCINITAS
SOLANA BEACH
DEL MAR
LA JOLLA
PACIFIC OCEAN
R7W
R6W
R5W
R4W
R3W
R2W
R1W
R1E
R2E
R3E
R4E
R5E
R6E
R7E
R8E
T2S
T3S
T4S
T5S
T6S
T7S
T8S
T9S
T10S
T11S
30,000 20 0 0 30,000


PROJECT SITE
100YR-6HR=2.5"
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 6-HOUR PRECIPITATION
DRAWN BY: R.A.L.
PLATE E-5.4
SHEET NO.
DR. NO.
APPROVED CHIEF ENGINEER R.E. NO. 8822
DATE
REVISED


PROJECT SITE
100YR-24HR=4.5"
NOTES:
1. Isohyetals from NOAA Atlas 2, Volume XI - California, 1973.
RCFC & WCD
HYDROLOGY MANUAL
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
100-YEAR — 24-HOUR PRECIPITATION
PLATE E-5.6
APPROVED CHIEF ENGINEER R.E. NO. 8822
DATE
DRAWN BY:
SHEET NO.
DR. NO.
REVISED

PROJECT SITE
SLOPE=0.50

NOTES:
1. Slope of Intensity-Duration Curve based on District analysis of automatic recording rain gage records

RCFC & WCD
HYDROLOGY MANUAL

RIVERSIDE COUNTY FLOOD CONTROL
AND
WATER CONSERVATION DISTRICT

SLOPE OF INTENSITY DURATION CURVE

APPROVED CHIEF ENGINEER R.E. NO. 8822	DRAWN BY: R.A.S.	SHEET NO.
DATE	PLATE D-4.6	DR. NO.
REVISED		

10-YEAR ONSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 09/24/24 File:PROP10.out

24-0564 - HERITAGE VALLEY BUSINESS CENTER
ONSITE RATIONAL METHOD HYDROLOGY
10 YEAR STORM EVENT
FN: PROP10.OUT - MJS

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6584

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.500(In.)
100 year, 1 hour precipitation = 1.300(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.829(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 875.000(Ft.)
Top (of initial area) elevation = 1436.000(Ft.)
Bottom (of initial area) elevation = 1429.300(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.00766 s(percent)= 0.77
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.943 min.
Rainfall intensity = 1.858(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 6.364(CFS)
Total initial stream area = 3.900(Ac.)
Pervious area fraction = 0.100

++

Process from Point/Station 101.000 to Point/Station 102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1425.400(Ft.)

```
Downstream point/station elevation =  1424.700(Ft.)
Pipe length  =   252.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.364(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =     6.364(CFS)
Normal flow depth in pipe =   13.72(In.)
Flow top width inside pipe =   19.99(In.)
Critical Depth =   11.17(In.)
Pipe flow velocity =      3.82(Ft/s)
Travel time through pipe =    1.10 min.
Time of concentration (TC) =    13.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      102.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    13.04 min.
Rainfall intensity =      1.778(In/Hr) for a    10.0 year storm
Subarea runoff =      8.425(CFS) for      5.400(Ac.)
Total runoff =     14.789(CFS)  Total area =       9.300(Ac.)


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Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1424.700(Ft.)
Downstream point/station elevation =  1423.800(Ft.)
Pipe length  =   490.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.789(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    14.789(CFS)
Normal flow depth in pipe =   21.09(In.)
Flow top width inside pipe =   27.41(In.)
Critical Depth =   15.54(In.)
Pipe flow velocity =      4.01(Ft/s)
Travel time through pipe =    2.03 min.
Time of concentration (TC) =    15.08 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    15.08 min.
Rainfall intensity =      1.654(In/Hr) for a    10.0 year storm
Subarea runoff =      6.231(CFS) for      4.300(Ac.)
Total runoff =     21.020(CFS)  Total area =      13.600(Ac.)


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Process from Point/Station      103.000 to Point/Station      104.000
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**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1423.800(Ft.)
Downstream point/station elevation = 1423.000(Ft.)
Pipe length = 290.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 21.020(CFS)
Nearest computed pipe diameter = 30.00(In.)
Calculated individual pipe flow = 21.020(CFS)
Normal flow depth in pipe = 23.95(In.)
Flow top width inside pipe = 24.07(In.)
Critical Depth = 18.68(In.)
Pipe flow velocity = 5.00(Ft/s)
Travel time through pipe = 0.97 min.
Time of concentration (TC) = 16.04 min.

++
Process from Point/Station 104.000 to Point/Station 104.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 16.04 min.
Rainfall intensity = 1.603(In/Hr) for a 10.0 year storm
Subarea runoff = 7.581(CFS) for 5.400(Ac.)
Total runoff = 28.601(CFS) Total area = 19.000(Ac.)

++
Process from Point/Station 104.000 to Point/Station 105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1423.000(Ft.)
Downstream point/station elevation = 1422.500(Ft.)
Pipe length = 167.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 28.601(CFS)
Nearest computed pipe diameter = 33.00(In.)
Calculated individual pipe flow = 28.601(CFS)
Normal flow depth in pipe = 26.72(In.)
Flow top width inside pipe = 25.91(In.)
Critical Depth = 21.32(In.)
Pipe flow velocity = 5.55(Ft/s)
Travel time through pipe = 0.50 min.
Time of concentration (TC) = 16.54 min.

++
Process from Point/Station 105.000 to Point/Station 105.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 16.54 min.
Rainfall intensity = 1.579(In/Hr) for a 10.0 year storm
Subarea runoff = 1.106(CFS) for 0.800(Ac.)
Total runoff = 29.707(CFS) Total area = 19.800(Ac.)

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Process from Point/Station      105.000 to Point/Station      106.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1422.500(Ft.)
Downstream point/station elevation =  1421.200(Ft.)
Pipe length  =   425.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    29.707(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    29.707(CFS)
Normal flow depth in pipe =   27.56(In.)
Flow top width inside pipe =   24.48(In.)
Critical Depth =   21.73(In.)
Pipe flow velocity =      5.61(Ft/s)
Travel time through pipe =    1.26 min.
Time of concentration (TC) =    17.81 min.


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Process from Point/Station      106.000 to Point/Station      106.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    17.81 min.
Rainfall intensity =      1.522(In/Hr) for a    10.0 year storm
Subarea runoff =      2.529(CFS) for      1.900(Ac.)
Total runoff =     32.236(CFS)  Total area =      21.700(Ac.)


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Process from Point/Station      106.000 to Point/Station      107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1421.200(Ft.)
Downstream point/station elevation =  1420.100(Ft.)
Pipe length  =   360.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    32.236(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    32.236(CFS)
Normal flow depth in pipe =   26.06(In.)
Flow top width inside pipe =   32.19(In.)
Critical Depth =   22.11(In.)
Pipe flow velocity =      5.88(Ft/s)
Travel time through pipe =    1.02 min.
Time of concentration (TC) =    18.83 min.


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Process from Point/Station      107.000 to Point/Station      107.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    18.83 min.
Rainfall intensity =      1.480(In/Hr) for a    10.0 year storm
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Subarea runoff =      2.199(CFS) for      1.700(Ac.)
Total runoff =     34.435(CFS)  Total area =      23.400(Ac.)


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Process from Point/Station      107.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.100(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =   483.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    34.435(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    34.435(CFS)
Normal flow depth in pipe =   27.38(In.)
Flow top width inside pipe =   30.73(In.)
Critical Depth =   22.87(In.)
Pipe flow velocity =      5.97(Ft/s)
Travel time through pipe =    1.35 min.
Time of concentration (TC) =    20.18 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     23.400(Ac.)
Runoff from this stream =     34.435(CFS)
Time of concentration =   20.18 min.
Rainfall intensity =     1.430(In/Hr)
Program is now starting with Main Stream No. 2


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Process from Point/Station      109.000 to Point/Station      110.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   118.000(Ft.)
Top (of initial area) elevation =  1435.000(Ft.)
Bottom (of initial area) elevation =  1429.700(Ft.)
Difference in elevation =     5.300(Ft.)
Slope =    0.04492  s(percent)=       4.49
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      2.872(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      1.270(CFS)
Total initial stream area =        0.500(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      110.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1425.700(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
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No. of pipes = 1  Required pipe flow  =     1.270(CFS)
Nearest computed pipe diameter  =      6.00(In.)
Calculated individual pipe flow  =     1.270(CFS)
Normal flow depth in pipe =    3.53(In.)
Flow top width inside pipe =    5.90(In.)
Critical depth could not be calculated.
Pipe flow velocity =     10.56(Ft/s)
Travel time through pipe =    0.09 min.
Time of concentration (TC) =     5.09 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.500(Ac.)
Runoff from this stream =      1.270(CFS)
Time of concentration =    5.09 min.
Rainfall intensity =     2.846(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      111.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   478.000(Ft.)
Top (of initial area) elevation =  1436.000(Ft.)
Bottom (of initial area) elevation =  1428.900(Ft.)
Difference in elevation =     7.100(Ft.)
Slope =    0.01485  s(percent)=       1.49
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.213 min.
Rainfall intensity =      2.241(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.515(CFS)
Total initial stream area =        3.300(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      111.000 to Point/Station      112.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1422.900(Ft.)
Downstream point/station elevation =  1420.300(Ft.)
Pipe length  =   293.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     6.515(CFS)
Nearest computed pipe diameter  =     18.00(In.)
Calculated individual pipe flow  =     6.515(CFS)
Normal flow depth in pipe =   10.66(In.)
Flow top width inside pipe =   17.69(In.)
Critical Depth =   11.85(In.)
Pipe flow velocity =      5.98(Ft/s)
Travel time through pipe =    0.82 min.
Time of concentration (TC) =     9.03 min.


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Process from Point/Station      112.000 to Point/Station      112.000
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**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     9.03 min.
Rainfall intensity =      2.137(In/Hr) for a    10.0 year storm
Subarea runoff =      9.407(CFS) for      5.000(Ac.)
Total runoff =     15.922(CFS)  Total area =       8.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1420.300(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =   242.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    15.922(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    15.922(CFS)
Normal flow depth in pipe =   16.83(In.)
Flow top width inside pipe =   21.97(In.)
Critical Depth =   17.27(In.)
Pipe flow velocity =      6.76(Ft/s)
Travel time through pipe =    0.60 min.
Time of concentration (TC) =     9.63 min.


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Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      8.300(Ac.)
Runoff from this stream =     15.922(CFS)
Time of concentration =    9.63 min.
Rainfall intensity =     2.070(In/Hr)
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
Initial area flow distance =   631.000(Ft.)
Top (of initial area) elevation =  1435.000(Ft.)
Bottom (of initial area) elevation =  1428.200(Ft.)
Difference in elevation =     6.800(Ft.)
Slope =    0.01078  s(percent)=       1.08
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.787 min.
Rainfall intensity =      2.053(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      7.043(CFS)
Total initial stream area =        3.900(Ac.)
```

```
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      114.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.200(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     7.043(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     7.043(CFS)
Normal flow depth in pipe =    5.65(In.)
Flow top width inside pipe =    8.70(In.)
Critical depth could not be calculated.
Pipe flow velocity =     24.11(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Stream flow area =      3.900(Ac.)
Runoff from this stream =      7.043(CFS)
Time of concentration =    9.80 min.
Rainfall intensity =     2.052(In/Hr)
Program is now starting with Main Stream No. 5


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   620.000(Ft.)
Top (of initial area) elevation =  1435.000(Ft.)
Bottom (of initial area) elevation =  1428.200(Ft.)
Difference in elevation =     6.800(Ft.)
Slope =    0.01097  s(percent)=       1.10
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.684 min.
Rainfall intensity =      2.064(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.880
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      9.260(CFS)
Total initial stream area =        5.100(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      116.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.200(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     9.260(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     9.260(CFS)
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```
Normal flow depth in pipe =    6.97(In.)
Flow top width inside pipe =    7.52(In.)
Critical depth could not be calculated.
Pipe flow velocity =     25.20(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.69 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 5
Stream flow area =      5.100(Ac.)
Runoff from this stream =      9.260(CFS)
Time of concentration =    9.69 min.
Rainfall intensity =     2.063(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       34.435     20.18                1.430
2        1.270      5.09                2.846
3       15.922      9.63                2.070
4        7.043      9.80                2.052
5        9.260      9.69                2.063
Largest stream flow has longer time of concentration
Qp =     34.435 + sum of
          Qb         Ia/Ib
           1.270 *    0.502 =      0.638
          Qb         Ia/Ib
          15.922 *    0.691 =     10.998
          Qb         Ia/Ib
           7.043 *    0.697 =      4.908
          Qb         Ia/Ib
           9.260 *    0.693 =      6.419
Qp =     57.399

Total of 5 main streams to confluence:
Flow rates before confluence point:
      34.435       1.270      15.922       7.043       9.260
Area of streams before confluence:
       23.400        0.500        8.300        3.900        5.100


Results of confluence:
Total flow rate =     57.399(CFS)
Time of concentration =    20.175 min.
Effective stream area after confluence  =     41.200(Ac.)
End of computations, total study area =           41.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
```

10-YEAR OFFSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 09/25/24 File:OFFSITE10.out

24-0564 - HERITAGE VALLEY BUSINESS CENTER
OFFSITE RATIONAL METHOD HYDROLOGY
10 YEAR STORM EVENT
FN: OFFSITE10.OUT - MJS

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6584

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 10.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.500(In.)
100 year, 1 hour precipitation = 1.300(In.)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.829(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 597.000(Ft.)
Top (of initial area) elevation = 1433.100(Ft.)
Bottom (of initial area) elevation = 1430.300(Ft.)
Difference in elevation = 2.800(Ft.)
Slope = 0.00469 s(percent)= 0.47
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.305 min.
Rainfall intensity = 1.910(In/Hr) for a 10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
RI index for soil(AMC 2) = 69.30
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 7.050(CFS)
Total initial stream area = 4.200(Ac.)
Pervious area fraction = 0.100

++

Process from Point/Station 101.000 to Point/Station 102.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1430.300(Ft.)

```
Downstream point elevation =  1428.000(Ft.)
Channel length thru subarea  =   726.000(Ft.)
Channel base width      =    6.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =      9.971(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =      9.971(CFS)
Depth of flow =   0.288(Ft.), Average velocity =   1.702(Ft/s)
Channel flow top width =   34.756(Ft.)
Flow Velocity =    1.70(Ft/s)
Travel time  =    7.11 min.
Time of concentration =   18.42 min.

Sub-Channel No. 1 Critical depth =      0.248(Ft.)
  '     '       '     Critical flow top width =     30.805(Ft.)
  '     '       '     Critical flow velocity=    2.184(Ft/s)
  '     '       '     Critical flow area =      4.565(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.050
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  74.70
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.497(In/Hr) for a    10.0 year storm
Subarea runoff =      5.789(CFS) for      4.400(Ac.)
Total runoff =     12.839(CFS)  Total area =       8.600(Ac.)
Depth of flow =   0.321(Ft.), Average velocity =   1.815(Ft/s)

Sub-Channel No. 1 Critical depth =      0.279(Ft.)
  '     '       '     Critical flow top width =     33.930(Ft.)
  '     '       '     Critical flow velocity=    2.302(Ft/s)
  '     '       '     Critical flow area =      5.576(Sq.Ft)



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Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1423.600(Ft.)
Downstream point/station elevation =  1423.000(Ft.)
Pipe length  =   179.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    12.839(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    12.839(CFS)
Normal flow depth in pipe =   19.27(In.)
Flow top width inside pipe =   19.10(In.)
Critical Depth =   15.47(In.)
Pipe flow velocity =      4.75(Ft/s)
Travel time through pipe =    0.63 min.
Time of concentration (TC) =    19.04 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.600(Ac.)
Runoff from this stream =     12.839(CFS)
Time of concentration =   19.04 min.
Rainfall intensity =     1.472(In/Hr)
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Process from Point/Station      104.000 to Point/Station      105.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   567.000(Ft.)
Top (of initial area) elevation =  1433.000(Ft.)
Bottom (of initial area) elevation =  1431.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00353  s(percent)=       0.35
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.724 min.
Rainfall intensity =      1.876(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.878
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     11.201(CFS)
Total initial stream area =        6.800(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      105.000 to Point/Station      106.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1431.000(Ft.)
Downstream point elevation =  1428.000(Ft.)
Channel length thru subarea  =   626.000(Ft.)
Channel base width      =    6.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =     14.423(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     14.423(CFS)
Depth of flow =   0.309(Ft.), Average velocity =   2.181(Ft/s)
Channel flow top width =   36.858(Ft.)
Flow Velocity =    2.18(Ft/s)
Travel time  =    4.78 min.
Time of concentration =   16.51 min.

Sub-Channel No. 1 Critical depth =      0.295(Ft.)
  '     '       '     Critical flow top width =     35.492(Ft.)
  '     '       '     Critical flow velocity=    2.357(Ft/s)
  '     '       '     Critical flow area =      6.118(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
RI index for soil(AMC 2)  =  69.30
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      1.581(In/Hr) for a    10.0 year storm
Subarea runoff =      6.366(CFS) for      4.600(Ac.)
Total runoff =     17.568(CFS)  Total area =      11.400(Ac.)
Depth of flow =   0.336(Ft.), Average velocity =   2.294(Ft/s)

Sub-Channel No. 1 Critical depth =      0.324(Ft.)
  '     '       '     Critical flow top width =     38.422(Ft.)
  '     '       '     Critical flow velocity=    2.440(Ft/s)
  '     '       '     Critical flow area =      7.201(Sq.Ft)
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Process from Point/Station      106.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1423.600(Ft.)
Downstream point/station elevation =  1423.000(Ft.)
Pipe length  =    48.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    17.568(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    17.568(CFS)
Normal flow depth in pipe =   17.06(In.)
Flow top width inside pipe =   16.39(In.)
Critical Depth =   18.36(In.)
Pipe flow velocity =      8.40(Ft/s)
Travel time through pipe =    0.10 min.
Time of concentration (TC) =    16.60 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     11.400(Ac.)
Runoff from this stream =     17.568(CFS)
Time of concentration =   16.60 min.
Rainfall intensity =     1.576(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       12.839     19.04                 1.472
2       17.568     16.60                 1.576
Largest stream flow has longer or shorter time of concentration
Qp =     17.568 + sum of
          Qa          Tb/Ta
          12.839 *    0.872 =     11.192
Qp =     28.760

Total of 2 streams to confluence:
Flow rates before confluence point:
      12.839      17.568
Area of streams before confluence:
        8.600       11.400
Results of confluence:
Total flow rate =     28.760(CFS)
Time of concentration =    16.602 min.
Effective stream area after confluence =     20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1423.000(Ft.)
Downstream point/station elevation =  1422.700(Ft.)
Pipe length  =   131.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    28.760(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    28.760(CFS)
Normal flow depth in pipe =   26.72(In.)
Flow top width inside pipe =   31.49(In.)
Critical Depth =   20.84(In.)
Pipe flow velocity =      5.11(Ft/s)
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Travel time through pipe =    0.43 min.
Time of concentration (TC) =    17.03 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      107.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    17.03 min.
Rainfall intensity =      1.556(In/Hr) for a    10.0 year storm
Subarea runoff =      1.089(CFS) for      0.800(Ac.)
Total runoff =     29.850(CFS)  Total area =      20.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      107.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.875
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    17.03 min.
Rainfall intensity =      1.556(In/Hr) for a    10.0 year storm
Subarea runoff =      0.953(CFS) for      0.700(Ac.)
Total runoff =     30.803(CFS)  Total area =      21.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1422.700(Ft.)
Downstream point/station elevation =  1421.500(Ft.)
Pipe length  =   619.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    30.803(CFS)
Nearest computed pipe diameter  =     36.00(In.)
Calculated individual pipe flow  =    30.803(CFS)
Normal flow depth in pipe =   31.41(In.)
Flow top width inside pipe =   24.02(In.)
Critical Depth =   21.57(In.)
Pipe flow velocity =      4.71(Ft/s)
Travel time through pipe =    2.19 min.
Time of concentration (TC) =    19.22 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
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Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    19.22 min.
Rainfall intensity =      1.465(In/Hr) for a    10.0 year storm
Subarea runoff =      0.512(CFS) for      0.400(Ac.)
Total runoff =     31.315(CFS)  Total area =      21.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.874
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    19.22 min.
Rainfall intensity =      1.465(In/Hr) for a    10.0 year storm
Subarea runoff =      0.512(CFS) for      0.400(Ac.)
Total runoff =     31.827(CFS)  Total area =      22.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1421.500(Ft.)
Downstream point/station elevation =  1420.900(Ft.)
Pipe length  =   460.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    31.827(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    31.827(CFS)
Normal flow depth in pipe =   30.47(In.)
Flow top width inside pipe =   37.49(In.)
Critical Depth =   20.93(In.)
Pipe flow velocity =      4.26(Ft/s)
Travel time through pipe =    1.80 min.
Time of concentration (TC) =    21.02 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      109.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    21.02 min.
Rainfall intensity =      1.401(In/Hr) for a    10.0 year storm
Subarea runoff =      0.611(CFS) for      0.500(Ac.)
Total runoff =     32.438(CFS)  Total area =      22.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      109.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
```

```
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    21.02 min.
Rainfall intensity =      1.401(In/Hr) for a    10.0 year storm
Subarea runoff =      0.611(CFS) for      0.500(Ac.)
Total runoff =     33.050(CFS)  Total area =      23.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1420.900(Ft.)
Downstream point/station elevation =  1420.300(Ft.)
Pipe length  =   379.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    33.050(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    33.050(CFS)
Normal flow depth in pipe =   32.16(In.)
Flow top width inside pipe =   29.67(In.)
Critical Depth =   21.85(In.)
Pipe flow velocity =      4.51(Ft/s)
Travel time through pipe =    1.40 min.
Time of concentration (TC) =    22.42 min.
End of computations, total study area =           23.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  70.2
```

100-YEAR ONSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 09/24/24 File:PROP100.out

24-0564 - HERITAGE VALLEY BUSINESS CENTER
ONSITE RATIONAL METHOD HYDROLOGY
100 YEAR STORM EVENT
FN: PROP100.OUT - MJS

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6584

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.500(In.)
100 year, 1 hour precipitation = 1.300(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.300(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 875.000(Ft.)
Top (of initial area) elevation = 1436.000(Ft.)
Bottom (of initial area) elevation = 1429.300(Ft.)
Difference in elevation = 6.700(Ft.)
Slope = 0.00766 s(percent)= 0.77
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.943 min.
Rainfall intensity = 2.914(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 10.053(CFS)
Total initial stream area = 3.900(Ac.)
Pervious area fraction = 0.100

++

Process from Point/Station 101.000 to Point/Station 102.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1425.400(Ft.)

```
Downstream point/station elevation =  1424.700(Ft.)
Pipe length  =   252.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.053(CFS)
Nearest computed pipe diameter  =     24.00(In.)
Calculated individual pipe flow  =    10.053(CFS)
Normal flow depth in pipe =   16.90(In.)
Flow top width inside pipe =   21.91(In.)
Critical Depth =   13.61(In.)
Pipe flow velocity =      4.26(Ft/s)
Travel time through pipe =    0.99 min.
Time of concentration (TC) =    12.93 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      102.000
**** SUBAREA FLOW ADDITION ****
____________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.884
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    12.93 min.
Rainfall intensity =      2.800(In/Hr) for a   100.0 year storm
Subarea runoff =     13.370(CFS) for      5.400(Ac.)
Total runoff =     23.423(CFS)  Total area =       9.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
____________________________________________________________________________
Upstream point/station elevation =  1424.700(Ft.)
Downstream point/station elevation =  1423.800(Ft.)
Pipe length  =   490.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    23.423(CFS)
Nearest computed pipe diameter  =     33.00(In.)
Calculated individual pipe flow  =    23.423(CFS)
Normal flow depth in pipe =   28.13(In.)
Flow top width inside pipe =   23.42(In.)
Critical Depth =   19.21(In.)
Pipe flow velocity =      4.34(Ft/s)
Travel time through pipe =    1.88 min.
Time of concentration (TC) =    14.81 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** SUBAREA FLOW ADDITION ****
____________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    14.81 min.
Rainfall intensity =      2.616(In/Hr) for a   100.0 year storm
Subarea runoff =      9.937(CFS) for      4.300(Ac.)
Total runoff =     33.360(CFS)  Total area =      13.600(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      104.000
```

**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1423.800(Ft.)
Downstream point/station elevation = 1423.000(Ft.)
Pipe length = 290.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 33.360(CFS)
Nearest computed pipe diameter = 36.00(In.)
Calculated individual pipe flow = 33.360(CFS)
Normal flow depth in pipe = 28.08(In.)
Flow top width inside pipe = 29.83(In.)
Critical Depth = 22.50(In.)
Pipe flow velocity = 5.64(Ft/s)
Travel time through pipe = 0.86 min.
Time of concentration (TC) = 15.67 min.

++

Process from Point/Station 104.000 to Point/Station 104.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 15.67 min.
Rainfall intensity = 2.544(In/Hr) for a 100.0 year storm
Subarea runoff = 12.128(CFS) for 5.400(Ac.)
Total runoff = 45.488(CFS) Total area = 19.000(Ac.)

++

Process from Point/Station 104.000 to Point/Station 105.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****

Upstream point/station elevation = 1423.000(Ft.)
Downstream point/station elevation = 1422.500(Ft.)
Pipe length = 167.00(Ft.) Manning's N = 0.013
No. of pipes = 1 Required pipe flow = 45.488(CFS)
Nearest computed pipe diameter = 39.00(In.)
Calculated individual pipe flow = 45.488(CFS)
Normal flow depth in pipe = 32.25(In.)
Flow top width inside pipe = 29.51(In.)
Critical Depth = 25.81(In.)
Pipe flow velocity = 6.21(Ft/s)
Travel time through pipe = 0.45 min.
Time of concentration (TC) = 16.12 min.

++

Process from Point/Station 105.000 to Point/Station 105.000
**** SUBAREA FLOW ADDITION ****

COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2) = 69.00
Pervious area fraction = 0.100; Impervious fraction = 0.900
Time of concentration = 16.12 min.
Rainfall intensity = 2.508(In/Hr) for a 100.0 year storm
Subarea runoff = 1.771(CFS) for 0.800(Ac.)
Total runoff = 47.259(CFS) Total area = 19.800(Ac.)

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Process from Point/Station      105.000 to Point/Station      106.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1422.500(Ft.)
Downstream point/station elevation =  1421.200(Ft.)
Pipe length  =   425.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    47.259(CFS)
Nearest computed pipe diameter  =     39.00(In.)
Calculated individual pipe flow  =    47.259(CFS)
Normal flow depth in pipe =   33.38(In.)
Flow top width inside pipe =   27.40(In.)
Critical Depth =   26.29(In.)
Pipe flow velocity =      6.26(Ft/s)
Travel time through pipe =    1.13 min.
Time of concentration (TC) =    17.25 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      106.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    17.25 min.
Rainfall intensity =      2.425(In/Hr) for a   100.0 year storm
Subarea runoff =      4.064(CFS) for      1.900(Ac.)
Total runoff =     51.323(CFS)  Total area =      21.700(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1421.200(Ft.)
Downstream point/station elevation =  1420.100(Ft.)
Pipe length  =   360.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    51.323(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    51.323(CFS)
Normal flow depth in pipe =   31.83(In.)
Flow top width inside pipe =   35.99(In.)
Critical Depth =   26.87(In.)
Pipe flow velocity =      6.56(Ft/s)
Travel time through pipe =    0.91 min.
Time of concentration (TC) =    18.16 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      107.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    18.16 min.
Rainfall intensity =      2.363(In/Hr) for a   100.0 year storm
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Subarea runoff =      3.542(CFS) for      1.700(Ac.)
Total runoff =     54.865(CFS)  Total area =      23.400(Ac.)


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Process from Point/Station      107.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1420.100(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =   483.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    54.865(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    54.865(CFS)
Normal flow depth in pipe =   33.66(In.)
Flow top width inside pipe =   33.52(In.)
Critical Depth =   27.82(In.)
Pipe flow velocity =      6.64(Ft/s)
Travel time through pipe =    1.21 min.
Time of concentration (TC) =    19.38 min.


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Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =     23.400(Ac.)
Runoff from this stream =     54.865(CFS)
Time of concentration =   19.38 min.
Rainfall intensity =     2.288(In/Hr)
Program is now starting with Main Stream No. 2


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Process from Point/Station      109.000 to Point/Station      110.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   118.000(Ft.)
Top (of initial area) elevation =  1435.000(Ft.)
Bottom (of initial area) elevation =  1429.700(Ft.)
Difference in elevation =     5.300(Ft.)
Slope =    0.04492  s(percent)=       4.49
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Warning: TC computed to be less than 5 min.; program is assuming the
time of concentration is 5 minutes.
Initial area time of concentration =    5.000 min.
Rainfall intensity =      4.503(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.889
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      2.003(CFS)
Total initial stream area =        0.500(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      110.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1425.700(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =    59.00(Ft.)   Manning's N = 0.013
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```
No. of pipes = 1  Required pipe flow  =     2.003(CFS)
Nearest computed pipe diameter  =      9.00(In.)
Calculated individual pipe flow  =     2.003(CFS)
Normal flow depth in pipe =    3.67(In.)
Flow top width inside pipe =    8.84(In.)
Critical Depth =    7.71(In.)
Pipe flow velocity =     11.83(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =     5.08 min.


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Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
______________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      0.500(Ac.)
Runoff from this stream =      2.003(CFS)
Time of concentration =    5.08 min.
Rainfall intensity =     4.466(In/Hr)
Program is now starting with Main Stream No. 3


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      100.000 to Point/Station      111.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   478.000(Ft.)
Top (of initial area) elevation =  1436.000(Ft.)
Bottom (of initial area) elevation =  1428.900(Ft.)
Difference in elevation =     7.100(Ft.)
Slope =    0.01485  s(percent)=       1.49
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    8.213 min.
Rainfall intensity =      3.514(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.887
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     10.283(CFS)
Total initial stream area =        3.300(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      111.000 to Point/Station      112.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1422.900(Ft.)
Downstream point/station elevation =  1420.300(Ft.)
Pipe length  =   293.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    10.283(CFS)
Nearest computed pipe diameter  =     21.00(In.)
Calculated individual pipe flow  =    10.283(CFS)
Normal flow depth in pipe =   12.81(In.)
Flow top width inside pipe =   20.49(In.)
Critical Depth =   14.32(In.)
Pipe flow velocity =      6.69(Ft/s)
Travel time through pipe =    0.73 min.
Time of concentration (TC) =     8.94 min.


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Process from Point/Station      112.000 to Point/Station      112.000
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**** SUBAREA FLOW ADDITION ****
_____________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =     8.94 min.
Rainfall intensity =      3.367(In/Hr) for a   100.0 year storm
Subarea runoff =     14.924(CFS) for      5.000(Ac.)
Total runoff =     25.207(CFS)  Total area =       8.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      112.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
_____________________________________________________________________
Upstream point/station elevation =  1420.300(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =   242.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    25.207(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    25.207(CFS)
Normal flow depth in pipe =   21.47(In.)
Flow top width inside pipe =   21.79(In.)
Critical Depth =   21.05(In.)
Pipe flow velocity =      7.44(Ft/s)
Travel time through pipe =    0.54 min.
Time of concentration (TC) =     9.49 min.


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Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
_____________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 3
Stream flow area =      8.300(Ac.)
Runoff from this stream =     25.207(CFS)
Time of concentration =    9.49 min.
Rainfall intensity =     3.270(In/Hr)
Program is now starting with Main Stream No. 4


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      113.000 to Point/Station      114.000
**** INITIAL AREA EVALUATION ****
_____________________________________________________________________
Initial area flow distance =   631.000(Ft.)
Top (of initial area) elevation =  1435.000(Ft.)
Bottom (of initial area) elevation =  1428.200(Ft.)
Difference in elevation =     6.800(Ft.)
Slope =    0.01078  s(percent)=       1.08
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.787 min.
Rainfall intensity =      3.219(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     11.121(CFS)
Total initial stream area =        3.900(Ac.)
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Pervious area fraction = 0.100


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Process from Point/Station      114.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.200(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    11.121(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    11.121(CFS)
Normal flow depth in pipe =    6.19(In.)
Flow top width inside pipe =   11.99(In.)
Critical depth could not be calculated.
Pipe flow velocity =     27.20(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.80 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 4
Stream flow area =      3.900(Ac.)
Runoff from this stream =     11.121(CFS)
Time of concentration =    9.80 min.
Rainfall intensity =     3.217(In/Hr)
Program is now starting with Main Stream No. 5


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      115.000 to Point/Station      116.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   620.000(Ft.)
Top (of initial area) elevation =  1435.000(Ft.)
Bottom (of initial area) elevation =  1428.200(Ft.)
Difference in elevation =     6.800(Ft.)
Slope =    0.01097  s(percent)=       1.10
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.684 min.
Rainfall intensity =      3.236(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     14.621(CFS)
Total initial stream area =        5.100(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      116.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1424.200(Ft.)
Downstream point/station elevation =  1418.600(Ft.)
Pipe length  =    16.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    14.621(CFS)
Nearest computed pipe diameter  =     12.00(In.)
Calculated individual pipe flow  =    14.621(CFS)
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Normal flow depth in pipe =    7.35(In.)
Flow top width inside pipe =   11.69(In.)
Critical depth could not be calculated.
Pipe flow velocity =     28.98(Ft/s)
Travel time through pipe =    0.01 min.
Time of concentration (TC) =     9.69 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 5
Stream flow area =      5.100(Ac.)
Runoff from this stream =     14.621(CFS)
Time of concentration =    9.69 min.
Rainfall intensity =     3.234(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                (In/Hr)


1       54.865     19.38                 2.288
2        2.003      5.08                 4.466
3       25.207      9.49                 3.270
4       11.121      9.80                 3.217
5       14.621      9.69                 3.234
Largest stream flow has longer time of concentration
Qp =     54.865 + sum of
          Qb         Ia/Ib
           2.003 *    0.512 =      1.026
          Qb         Ia/Ib
          25.207 *    0.700 =     17.637
          Qb         Ia/Ib
          11.121 *    0.711 =      7.908
          Qb         Ia/Ib
          14.621 *    0.707 =     10.341
Qp =     91.776

Total of 5 main streams to confluence:
Flow rates before confluence point:
      54.865       2.003      25.207      11.121      14.621
Area of streams before confluence:
       23.400        0.500        8.300        3.900        5.100


Results of confluence:
Total flow rate =     91.776(CFS)
Time of concentration =    19.376 min.
Effective stream area after confluence  =     41.200(Ac.)
End of computations, total study area =           41.20 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  69.0
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100-YEAR OFFSITE HYDROLOGY (RATIONAL METHOD)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 09/25/24 File:OFFSITE100.out

24-0564 - HERITAGE VALLEY BUSINESS CENTER
OFFSITE RATIONAL METHOD HYDROLOGY
100 YEAR STORM EVENT
FN: OFFSITE100.OUT - MJS

********* Hydrology Study Control Information **********

English (in-lb) Units used in input data file

Program License Serial Number 6584

Rational Method Hydrology Program based on
Riverside County Flood Control & Water Conservation District
1978 hydrology manual

Storm event (year) = 100.00 Antecedent Moisture Condition = 2

2 year, 1 hour precipitation = 0.500(In.)
100 year, 1 hour precipitation = 1.300(In.)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.300(In/Hr)
Slope of intensity duration curve = 0.5000

++

Process from Point/Station 100.000 to Point/Station 101.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 597.000(Ft.)
Top (of initial area) elevation = 1433.100(Ft.)
Bottom (of initial area) elevation = 1430.300(Ft.)
Difference in elevation = 2.800(Ft.)
Slope = 0.00469 s(percent)= 0.47
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.305 min.
Rainfall intensity = 2.995(In/Hr) for a 100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
RI index for soil(AMC 2) = 69.30
Pervious area fraction = 0.100; Impervious fraction = 0.900
Initial subarea runoff = 11.134(CFS)
Total initial stream area = 4.200(Ac.)
Pervious area fraction = 0.100

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Process from Point/Station 101.000 to Point/Station 102.000
**** IMPROVED CHANNEL TRAVEL TIME ****

Upstream point elevation = 1430.300(Ft.)

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Downstream point elevation =  1428.000(Ft.)
Channel length thru subarea  =   726.000(Ft.)
Channel base width      =    6.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =     15.846(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     15.846(CFS)
Depth of flow =   0.351(Ft.), Average velocity =   1.915(Ft/s)
Channel flow top width =   41.125(Ft.)
Flow Velocity =    1.91(Ft/s)
Travel time  =    6.32 min.
Time of concentration =   17.62 min.

Sub-Channel No. 1 Critical depth =      0.309(Ft.)
  '     '       '     Critical flow top width =     36.859(Ft.)
  '     '       '     Critical flow velocity=    2.396(Ft/s)
  '     '       '     Critical flow area =      6.613(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.886
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.050
Decimal fraction soil group D = 0.950
RI index for soil(AMC 2)  =  74.70
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.399(In/Hr) for a   100.0 year storm
Subarea runoff =      9.348(CFS) for      4.400(Ac.)
Total runoff =     20.482(CFS)  Total area =       8.600(Ac.)
Depth of flow =   0.392(Ft.), Average velocity =   2.043(Ft/s)

Sub-Channel No. 1 Critical depth =      0.348(Ft.)
  '     '       '     Critical flow top width =     40.766(Ft.)
  '     '       '     Critical flow velocity=    2.520(Ft/s)
  '     '       '     Critical flow area =      8.129(Sq.Ft)



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Process from Point/Station      102.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1423.600(Ft.)
Downstream point/station elevation =  1423.000(Ft.)
Pipe length  =   179.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    20.482(CFS)
Nearest computed pipe diameter  =     30.00(In.)
Calculated individual pipe flow  =    20.482(CFS)
Normal flow depth in pipe =   21.49(In.)
Flow top width inside pipe =   27.04(In.)
Critical Depth =   18.45(In.)
Pipe flow velocity =      5.44(Ft/s)
Travel time through pipe =    0.55 min.
Time of concentration (TC) =    18.17 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 1
Stream flow area =      8.600(Ac.)
Runoff from this stream =     20.482(CFS)
Time of concentration =   18.17 min.
Rainfall intensity =     2.362(In/Hr)
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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      104.000 to Point/Station      105.000
**** INITIAL AREA EVALUATION ****
______________________________________________________________________________
Initial area flow distance =   567.000(Ft.)
Top (of initial area) elevation =  1433.000(Ft.)
Bottom (of initial area) elevation =  1431.000(Ft.)
Difference in elevation =     2.000(Ft.)
Slope =    0.00353  s(percent)=       0.35
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.724 min.
Rainfall intensity =      2.941(In/Hr) for a   100.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.885
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     17.694(CFS)
Total initial stream area =        6.800(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      105.000 to Point/Station      106.000
**** IMPROVED CHANNEL TRAVEL TIME ****
______________________________________________________________________________
Upstream point elevation =  1431.000(Ft.)
Downstream point elevation =  1428.000(Ft.)
Channel length thru subarea  =   626.000(Ft.)
Channel base width      =    6.000(Ft.)
Slope or 'Z' of left channel bank =  50.000
Slope or 'Z' of right channel bank =  50.000
Estimated mean flow rate at midpoint of channel =     22.837(CFS)
Manning's 'N'    = 0.015
Maximum depth of channel  =    1.000(Ft.)
Flow(q) thru subarea =     22.837(CFS)
Depth of flow =   0.376(Ft.), Average velocity =   2.452(Ft/s)
Channel flow top width =   43.579(Ft.)
Flow Velocity =    2.45(Ft/s)
Travel time  =    4.26 min.
Time of concentration =   15.98 min.

Sub-Channel No. 1 Critical depth =      0.363(Ft.)
  '     '       '     Critical flow top width =     42.328(Ft.)
  '     '       '     Critical flow velocity=    2.602(Ft/s)
  '     '       '     Critical flow area =      8.778(Sq.Ft)

 Adding area flow to channel
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.050
RI index for soil(AMC 2)  =  69.30
Pervious area fraction =  0.100; Impervious fraction =  0.900
Rainfall intensity =      2.519(In/Hr) for a   100.0 year storm
Subarea runoff =     10.231(CFS) for      4.600(Ac.)
Total runoff =     27.925(CFS)  Total area =      11.400(Ac.)
Depth of flow =   0.409(Ft.), Average velocity =   2.580(Ft/s)

Sub-Channel No. 1 Critical depth =      0.398(Ft.)
  '     '       '     Critical flow top width =     45.844(Ft.)
  '     '       '     Critical flow velocity=    2.704(Ft/s)
  '     '       '     Critical flow area =     10.328(Sq.Ft)
```

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++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      106.000 to Point/Station      103.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1423.600(Ft.)
Downstream point/station elevation =  1423.000(Ft.)
Pipe length  =    48.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    27.925(CFS)
Nearest computed pipe diameter  =     27.00(In.)
Calculated individual pipe flow  =    27.925(CFS)
Normal flow depth in pipe =   18.38(In.)
Flow top width inside pipe =   25.18(In.)
Critical Depth =   22.06(In.)
Pipe flow velocity =      9.69(Ft/s)
Travel time through pipe =    0.08 min.
Time of concentration (TC) =    16.06 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      103.000
**** CONFLUENCE OF MINOR STREAMS ****
________________________________________________________________________
Along Main Stream number: 1 in normal stream number 2
Stream flow area =     11.400(Ac.)
Runoff from this stream =     27.925(CFS)
Time of concentration =   16.06 min.
Rainfall intensity =     2.513(In/Hr)
Summary of stream data:

Stream   Flow rate      TC            Rainfall Intensity
 No.       (CFS)       (min)                 (In/Hr)


1       20.482     18.17                 2.362
2       27.925     16.06                 2.513
Largest stream flow has longer or shorter time of concentration
Qp =     27.925 + sum of
          Qa          Tb/Ta
          20.482 *    0.884 =     18.103
Qp =     46.028

Total of 2 streams to confluence:
Flow rates before confluence point:
      20.482      27.925
Area of streams before confluence:
        8.600       11.400
Results of confluence:
Total flow rate =     46.028(CFS)
Time of concentration =    16.062 min.
Effective stream area after confluence =     20.000(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      107.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1423.000(Ft.)
Downstream point/station elevation =  1422.700(Ft.)
Pipe length  =   131.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    46.028(CFS)
Nearest computed pipe diameter  =     42.00(In.)
Calculated individual pipe flow  =    46.028(CFS)
Normal flow depth in pipe =   32.86(In.)
Flow top width inside pipe =   34.66(In.)
Critical Depth =   25.40(In.)
Pipe flow velocity =      5.70(Ft/s)
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```
Travel time through pipe =    0.38 min.
Time of concentration (TC) =    16.45 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      107.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    16.45 min.
Rainfall intensity =      2.483(In/Hr) for a   100.0 year storm
Subarea runoff =      1.753(CFS) for      0.800(Ac.)
Total runoff =     47.781(CFS)  Total area =      20.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      107.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.883
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    16.45 min.
Rainfall intensity =      2.483(In/Hr) for a   100.0 year storm
Subarea runoff =      1.534(CFS) for      0.700(Ac.)
Total runoff =     49.315(CFS)  Total area =      21.500(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      107.000 to Point/Station      108.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
________________________________________________________________________
Upstream point/station elevation =  1422.700(Ft.)
Downstream point/station elevation =  1421.500(Ft.)
Pipe length  =   619.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    49.315(CFS)
Nearest computed pipe diameter  =     45.00(In.)
Calculated individual pipe flow  =    49.315(CFS)
Normal flow depth in pipe =   34.22(In.)
Flow top width inside pipe =   38.41(In.)
Critical Depth =   25.77(In.)
Pipe flow velocity =      5.47(Ft/s)
Travel time through pipe =    1.88 min.
Time of concentration (TC) =    18.33 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** SUBAREA FLOW ADDITION ****
________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
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Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    18.33 min.
Rainfall intensity =      2.352(In/Hr) for a   100.0 year storm
Subarea runoff =      0.830(CFS) for      0.400(Ac.)
Total runoff =     50.145(CFS)  Total area =      21.900(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      108.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.882
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    18.33 min.
Rainfall intensity =      2.352(In/Hr) for a   100.0 year storm
Subarea runoff =      0.830(CFS) for      0.400(Ac.)
Total runoff =     50.974(CFS)  Total area =      22.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      108.000 to Point/Station      109.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1421.500(Ft.)
Downstream point/station elevation =  1420.900(Ft.)
Pipe length  =   460.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    50.974(CFS)
Nearest computed pipe diameter  =     48.00(In.)
Calculated individual pipe flow  =    50.974(CFS)
Normal flow depth in pipe =   38.63(In.)
Flow top width inside pipe =   38.06(In.)
Critical Depth =   25.69(In.)
Pipe flow velocity =      4.71(Ft/s)
Travel time through pipe =    1.63 min.
Time of concentration (TC) =    19.96 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      109.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    19.96 min.
Rainfall intensity =      2.254(In/Hr) for a   100.0 year storm
Subarea runoff =      0.993(CFS) for      0.500(Ac.)
Total runoff =     51.967(CFS)  Total area =      22.800(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      109.000
**** SUBAREA FLOW ADDITION ****
______________________________________________________________________________
COMMERCIAL subarea type
Runoff Coefficient = 0.881
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
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```
Decimal fraction soil group C = 1.000
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  69.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Time of concentration =    19.96 min.
Rainfall intensity =      2.254(In/Hr) for a   100.0 year storm
Subarea runoff =      0.993(CFS) for      0.500(Ac.)
Total runoff =     52.960(CFS)  Total area =      23.300(Ac.)


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      109.000 to Point/Station      110.000
**** PIPEFLOW TRAVEL TIME (Program estimated size) ****
______________________________________________________________________________
Upstream point/station elevation =  1420.900(Ft.)
Downstream point/station elevation =  1420.300(Ft.)
Pipe length  =   379.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =    52.960(CFS)
Nearest computed pipe diameter  =     48.00(In.)
Calculated individual pipe flow  =    52.960(CFS)
Normal flow depth in pipe =   36.52(In.)
Flow top width inside pipe =   40.96(In.)
Critical Depth =   26.21(In.)
Pipe flow velocity =      5.16(Ft/s)
Travel time through pipe =    1.22 min.
Time of concentration (TC) =    21.18 min.
End of computations, total study area =           23.30 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.100
Area averaged RI index number =  70.2
```

EXISTING CONDITION 2-YEAR, 24-HOUR UNIT HYDROGRAPH

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0
Study date 09/24/24 File: ONSITEPRE242.out

++

Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6584

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

24-0564 - HERITAGE VALLEY BUSINESS CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
EXISTING CONDITION, 2-YEAR 24-HOUR
FN: ONSITEPRE242.OUT- MJS

Drainage Area = 41.20(Ac.) = 0.064 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 41.20(Ac.) = 0.064 Sq. Mi.
Length along longest watercourse = 1645.00(Ft.)
Length along longest watercourse measured to centroid = 810.00(Ft.)
Length along longest watercourse = 0.312 Mi.
Length along longest watercourse measured to centroid = 0.153 Mi.
Difference in elevation = 7.40(Ft.)
Slope along watercourse = 23.7520 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.124 Hr.
Lag time = 7.45 Min.
25% of lag time = 1.86 Min.
40% of lag time = 2.98 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	1.30	53.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	4.50	185.40

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.300(In)
Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.300(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
   41.200           86.00         0.100
 Total Area Entered =     41.20(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
86.0  71.6      0.343     0.100        0.312       1.000      0.312
                                                 Sum (F) =   0.312
Area averaged mean soil loss (F) (In/Hr) =  0.312
Minimum soil loss rate ((In/Hr)) =  0.156
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.820
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         67.097          9.896              4.109
    2   0.167        134.194         38.517             15.993
    3   0.250        201.291         24.150             10.028
    4   0.333        268.388          9.307              3.864
    5   0.417        335.485          5.652              2.347
    6   0.500        402.582          3.790              1.574
    7   0.583        469.680          2.539              1.054
    8   0.667        536.777          1.966              0.816
    9   0.750        603.874          1.444              0.600
   10   0.833        670.971          1.051              0.436
   11   0.917        738.068          0.734              0.305
   12   1.000        805.165          0.955              0.396
                                Sum = 100.000   Sum=      41.522
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     0.07      0.010       (  0.554)       0.009        0.002
   2   0.17     0.07      0.010       (  0.551)       0.009        0.002
   3   0.25     0.07      0.010       (  0.549)       0.009        0.002
   4   0.33     0.10      0.016       (  0.547)       0.013        0.003
   5   0.42     0.10      0.016       (  0.545)       0.013        0.003
   6   0.50     0.10      0.016       (  0.543)       0.013        0.003
   7   0.58     0.10      0.016       (  0.541)       0.013        0.003
   8   0.67     0.10      0.016       (  0.539)       0.013        0.003
   9   0.75     0.10      0.016       (  0.537)       0.013        0.003
  10   0.83     0.13      0.021       (  0.534)       0.017        0.004
  11   0.92     0.13      0.021       (  0.532)       0.017        0.004
  12   1.00     0.13      0.021       (  0.530)       0.017        0.004
  13   1.08     0.10      0.016       (  0.528)       0.013        0.003
  14   1.17     0.10      0.016       (  0.526)       0.013        0.003
  15   1.25     0.10      0.016       (  0.524)       0.013        0.003
  16   1.33     0.10      0.016       (  0.522)       0.013        0.003
  17   1.42     0.10      0.016       (  0.520)       0.013        0.003
  18   1.50     0.10      0.016       (  0.518)       0.013        0.003
  19   1.58     0.10      0.016       (  0.516)       0.013        0.003
  20   1.67     0.10      0.016       (  0.514)       0.013        0.003
  21   1.75     0.10      0.016       (  0.511)       0.013        0.003
  22   1.83     0.13      0.021       (  0.509)       0.017        0.004
  23   1.92     0.13      0.021       (  0.507)       0.017        0.004
  24   2.00     0.13      0.021       (  0.505)       0.017        0.004
  25   2.08     0.13      0.021       (  0.503)       0.017        0.004
  26   2.17     0.13      0.021       (  0.501)       0.017        0.004
```

27	2.25	0.13	0.021	(0.499)	0.017	0.004
28	2.33	0.13	0.021	(0.497)	0.017	0.004
29	2.42	0.13	0.021	(0.495)	0.017	0.004
30	2.50	0.13	0.021	(0.493)	0.017	0.004
31	2.58	0.17	0.026	(0.491)	0.021	0.005
32	2.67	0.17	0.026	(0.489)	0.021	0.005
33	2.75	0.17	0.026	(0.487)	0.021	0.005
34	2.83	0.17	0.026	(0.485)	0.021	0.005
35	2.92	0.17	0.026	(0.483)	0.021	0.005
36	3.00	0.17	0.026	(0.481)	0.021	0.005
37	3.08	0.17	0.026	(0.479)	0.021	0.005
38	3.17	0.17	0.026	(0.477)	0.021	0.005
39	3.25	0.17	0.026	(0.475)	0.021	0.005
40	3.33	0.17	0.026	(0.473)	0.021	0.005
41	3.42	0.17	0.026	(0.471)	0.021	0.005
42	3.50	0.17	0.026	(0.469)	0.021	0.005
43	3.58	0.17	0.026	(0.467)	0.021	0.005
44	3.67	0.17	0.026	(0.465)	0.021	0.005
45	3.75	0.17	0.026	(0.463)	0.021	0.005
46	3.83	0.20	0.031	(0.461)	0.026	0.006
47	3.92	0.20	0.031	(0.459)	0.026	0.006
48	4.00	0.20	0.031	(0.457)	0.026	0.006
49	4.08	0.20	0.031	(0.456)	0.026	0.006
50	4.17	0.20	0.031	(0.454)	0.026	0.006
51	4.25	0.20	0.031	(0.452)	0.026	0.006
52	4.33	0.23	0.036	(0.450)	0.030	0.007
53	4.42	0.23	0.036	(0.448)	0.030	0.007
54	4.50	0.23	0.036	(0.446)	0.030	0.007
55	4.58	0.23	0.036	(0.444)	0.030	0.007
56	4.67	0.23	0.036	(0.442)	0.030	0.007
57	4.75	0.23	0.036	(0.440)	0.030	0.007
58	4.83	0.27	0.042	(0.438)	0.034	0.007
59	4.92	0.27	0.042	(0.436)	0.034	0.007
60	5.00	0.27	0.042	(0.434)	0.034	0.007
61	5.08	0.20	0.031	(0.433)	0.026	0.006
62	5.17	0.20	0.031	(0.431)	0.026	0.006
63	5.25	0.20	0.031	(0.429)	0.026	0.006
64	5.33	0.23	0.036	(0.427)	0.030	0.007
65	5.42	0.23	0.036	(0.425)	0.030	0.007
66	5.50	0.23	0.036	(0.423)	0.030	0.007
67	5.58	0.27	0.042	(0.421)	0.034	0.007
68	5.67	0.27	0.042	(0.420)	0.034	0.007
69	5.75	0.27	0.042	(0.418)	0.034	0.007
70	5.83	0.27	0.042	(0.416)	0.034	0.007
71	5.92	0.27	0.042	(0.414)	0.034	0.007
72	6.00	0.27	0.042	(0.412)	0.034	0.007
73	6.08	0.30	0.047	(0.410)	0.038	0.008
74	6.17	0.30	0.047	(0.408)	0.038	0.008
75	6.25	0.30	0.047	(0.407)	0.038	0.008
76	6.33	0.30	0.047	(0.405)	0.038	0.008
77	6.42	0.30	0.047	(0.403)	0.038	0.008
78	6.50	0.30	0.047	(0.401)	0.038	0.008
79	6.58	0.33	0.052	(0.399)	0.043	0.009
80	6.67	0.33	0.052	(0.398)	0.043	0.009
81	6.75	0.33	0.052	(0.396)	0.043	0.009
82	6.83	0.33	0.052	(0.394)	0.043	0.009
83	6.92	0.33	0.052	(0.392)	0.043	0.009
84	7.00	0.33	0.052	(0.390)	0.043	0.009
85	7.08	0.33	0.052	(0.389)	0.043	0.009
86	7.17	0.33	0.052	(0.387)	0.043	0.009
87	7.25	0.33	0.052	(0.385)	0.043	0.009
88	7.33	0.37	0.057	(0.383)	0.047	0.010
89	7.42	0.37	0.057	(0.382)	0.047	0.010
90	7.50	0.37	0.057	(0.380)	0.047	0.010
91	7.58	0.40	0.062	(0.378)	0.051	0.011
92	7.67	0.40	0.062	(0.376)	0.051	0.011
93	7.75	0.40	0.062	(0.375)	0.051	0.011
94	7.83	0.43	0.068	(0.373)	0.055	0.012
95	7.92	0.43	0.068	(0.371)	0.055	0.012

96	8.00	0.43	0.068	(0.370)	0.055	0.012
97	8.08	0.50	0.078	(0.368)	0.064	0.014
98	8.17	0.50	0.078	(0.366)	0.064	0.014
99	8.25	0.50	0.078	(0.364)	0.064	0.014
100	8.33	0.50	0.078	(0.363)	0.064	0.014
101	8.42	0.50	0.078	(0.361)	0.064	0.014
102	8.50	0.50	0.078	(0.359)	0.064	0.014
103	8.58	0.53	0.083	(0.358)	0.068	0.015
104	8.67	0.53	0.083	(0.356)	0.068	0.015
105	8.75	0.53	0.083	(0.354)	0.068	0.015
106	8.83	0.57	0.088	(0.353)	0.072	0.016
107	8.92	0.57	0.088	(0.351)	0.072	0.016
108	9.00	0.57	0.088	(0.349)	0.072	0.016
109	9.08	0.63	0.099	(0.348)	0.081	0.018
110	9.17	0.63	0.099	(0.346)	0.081	0.018
111	9.25	0.63	0.099	(0.344)	0.081	0.018
112	9.33	0.67	0.104	(0.343)	0.085	0.019
113	9.42	0.67	0.104	(0.341)	0.085	0.019
114	9.50	0.67	0.104	(0.339)	0.085	0.019
115	9.58	0.70	0.109	(0.338)	0.090	0.020
116	9.67	0.70	0.109	(0.336)	0.090	0.020
117	9.75	0.70	0.109	(0.335)	0.090	0.020
118	9.83	0.73	0.114	(0.333)	0.094	0.021
119	9.92	0.73	0.114	(0.331)	0.094	0.021
120	10.00	0.73	0.114	(0.330)	0.094	0.021
121	10.08	0.50	0.078	(0.328)	0.064	0.014
122	10.17	0.50	0.078	(0.327)	0.064	0.014
123	10.25	0.50	0.078	(0.325)	0.064	0.014
124	10.33	0.50	0.078	(0.323)	0.064	0.014
125	10.42	0.50	0.078	(0.322)	0.064	0.014
126	10.50	0.50	0.078	(0.320)	0.064	0.014
127	10.58	0.67	0.104	(0.319)	0.085	0.019
128	10.67	0.67	0.104	(0.317)	0.085	0.019
129	10.75	0.67	0.104	(0.316)	0.085	0.019
130	10.83	0.67	0.104	(0.314)	0.085	0.019
131	10.92	0.67	0.104	(0.312)	0.085	0.019
132	11.00	0.67	0.104	(0.311)	0.085	0.019
133	11.08	0.63	0.099	(0.309)	0.081	0.018
134	11.17	0.63	0.099	(0.308)	0.081	0.018
135	11.25	0.63	0.099	(0.306)	0.081	0.018
136	11.33	0.63	0.099	(0.305)	0.081	0.018
137	11.42	0.63	0.099	(0.303)	0.081	0.018
138	11.50	0.63	0.099	(0.302)	0.081	0.018
139	11.58	0.57	0.088	(0.300)	0.072	0.016
140	11.67	0.57	0.088	(0.299)	0.072	0.016
141	11.75	0.57	0.088	(0.297)	0.072	0.016
142	11.83	0.60	0.094	(0.296)	0.077	0.017
143	11.92	0.60	0.094	(0.294)	0.077	0.017
144	12.00	0.60	0.094	(0.293)	0.077	0.017
145	12.08	0.83	0.130	(0.291)	0.107	0.023
146	12.17	0.83	0.130	(0.290)	0.107	0.023
147	12.25	0.83	0.130	(0.289)	0.107	0.023
148	12.33	0.87	0.135	(0.287)	0.111	0.024
149	12.42	0.87	0.135	(0.286)	0.111	0.024
150	12.50	0.87	0.135	(0.284)	0.111	0.024
151	12.58	0.93	0.146	(0.283)	0.119	0.026
152	12.67	0.93	0.146	(0.281)	0.119	0.026
153	12.75	0.93	0.146	(0.280)	0.119	0.026
154	12.83	0.97	0.151	(0.279)	0.124	0.027
155	12.92	0.97	0.151	(0.277)	0.124	0.027
156	13.00	0.97	0.151	(0.276)	0.124	0.027
157	13.08	1.13	0.177	(0.274)	0.145	0.032
158	13.17	1.13	0.177	(0.273)	0.145	0.032
159	13.25	1.13	0.177	(0.272)	0.145	0.032
160	13.33	1.13	0.177	(0.270)	0.145	0.032
161	13.42	1.13	0.177	(0.269)	0.145	0.032
162	13.50	1.13	0.177	(0.267)	0.145	0.032
163	13.58	0.77	0.120	(0.266)	0.098	0.022
164	13.67	0.77	0.120	(0.265)	0.098	0.022

165	13.75	0.77	0.120	(0.263)	0.098	0.022
166	13.83	0.77	0.120	(0.262)	0.098	0.022
167	13.92	0.77	0.120	(0.261)	0.098	0.022
168	14.00	0.77	0.120	(0.259)	0.098	0.022
169	14.08	0.90	0.140	(0.258)	0.115	0.025
170	14.17	0.90	0.140	(0.257)	0.115	0.025
171	14.25	0.90	0.140	(0.255)	0.115	0.025
172	14.33	0.87	0.135	(0.254)	0.111	0.024
173	14.42	0.87	0.135	(0.253)	0.111	0.024
174	14.50	0.87	0.135	(0.252)	0.111	0.024
175	14.58	0.87	0.135	(0.250)	0.111	0.024
176	14.67	0.87	0.135	(0.249)	0.111	0.024
177	14.75	0.87	0.135	(0.248)	0.111	0.024
178	14.83	0.83	0.130	(0.246)	0.107	0.023
179	14.92	0.83	0.130	(0.245)	0.107	0.023
180	15.00	0.83	0.130	(0.244)	0.107	0.023
181	15.08	0.80	0.125	(0.243)	0.102	0.022
182	15.17	0.80	0.125	(0.241)	0.102	0.022
183	15.25	0.80	0.125	(0.240)	0.102	0.022
184	15.33	0.77	0.120	(0.239)	0.098	0.022
185	15.42	0.77	0.120	(0.238)	0.098	0.022
186	15.50	0.77	0.120	(0.236)	0.098	0.022
187	15.58	0.63	0.099	(0.235)	0.081	0.018
188	15.67	0.63	0.099	(0.234)	0.081	0.018
189	15.75	0.63	0.099	(0.233)	0.081	0.018
190	15.83	0.63	0.099	(0.232)	0.081	0.018
191	15.92	0.63	0.099	(0.230)	0.081	0.018
192	16.00	0.63	0.099	(0.229)	0.081	0.018
193	16.08	0.13	0.021	(0.228)	0.017	0.004
194	16.17	0.13	0.021	(0.227)	0.017	0.004
195	16.25	0.13	0.021	(0.226)	0.017	0.004
196	16.33	0.13	0.021	(0.225)	0.017	0.004
197	16.42	0.13	0.021	(0.224)	0.017	0.004
198	16.50	0.13	0.021	(0.222)	0.017	0.004
199	16.58	0.10	0.016	(0.221)	0.013	0.003
200	16.67	0.10	0.016	(0.220)	0.013	0.003
201	16.75	0.10	0.016	(0.219)	0.013	0.003
202	16.83	0.10	0.016	(0.218)	0.013	0.003
203	16.92	0.10	0.016	(0.217)	0.013	0.003
204	17.00	0.10	0.016	(0.216)	0.013	0.003
205	17.08	0.17	0.026	(0.215)	0.021	0.005
206	17.17	0.17	0.026	(0.214)	0.021	0.005
207	17.25	0.17	0.026	(0.212)	0.021	0.005
208	17.33	0.17	0.026	(0.211)	0.021	0.005
209	17.42	0.17	0.026	(0.210)	0.021	0.005
210	17.50	0.17	0.026	(0.209)	0.021	0.005
211	17.58	0.17	0.026	(0.208)	0.021	0.005
212	17.67	0.17	0.026	(0.207)	0.021	0.005
213	17.75	0.17	0.026	(0.206)	0.021	0.005
214	17.83	0.13	0.021	(0.205)	0.017	0.004
215	17.92	0.13	0.021	(0.204)	0.017	0.004
216	18.00	0.13	0.021	(0.203)	0.017	0.004
217	18.08	0.13	0.021	(0.202)	0.017	0.004
218	18.17	0.13	0.021	(0.201)	0.017	0.004
219	18.25	0.13	0.021	(0.200)	0.017	0.004
220	18.33	0.13	0.021	(0.199)	0.017	0.004
221	18.42	0.13	0.021	(0.198)	0.017	0.004
222	18.50	0.13	0.021	(0.197)	0.017	0.004
223	18.58	0.10	0.016	(0.196)	0.013	0.003
224	18.67	0.10	0.016	(0.195)	0.013	0.003
225	18.75	0.10	0.016	(0.194)	0.013	0.003
226	18.83	0.07	0.010	(0.193)	0.009	0.002
227	18.92	0.07	0.010	(0.193)	0.009	0.002
228	19.00	0.07	0.010	(0.192)	0.009	0.002
229	19.08	0.10	0.016	(0.191)	0.013	0.003
230	19.17	0.10	0.016	(0.190)	0.013	0.003
231	19.25	0.10	0.016	(0.189)	0.013	0.003
232	19.33	0.13	0.021	(0.188)	0.017	0.004
233	19.42	0.13	0.021	(0.187)	0.017	0.004

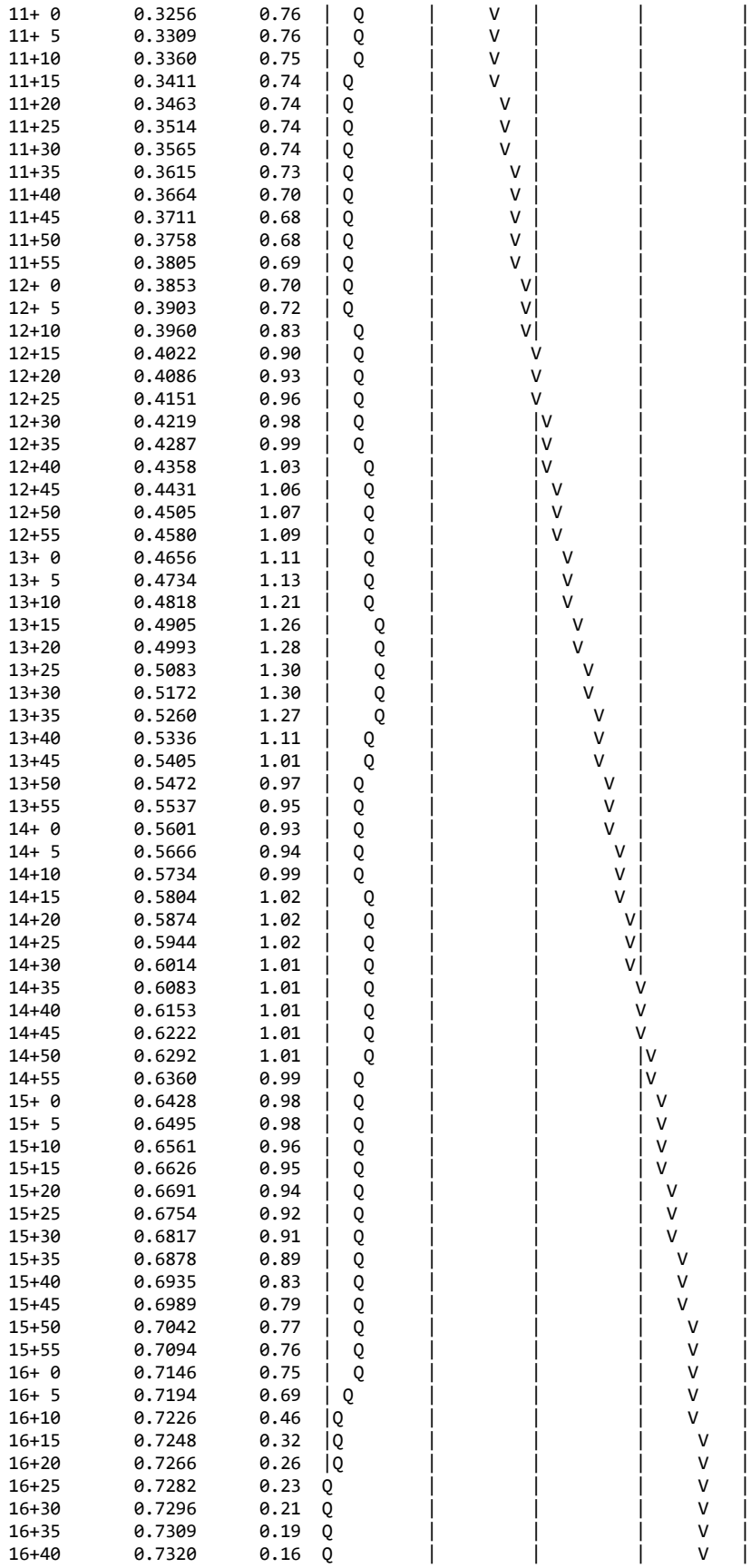
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234  19.50     0.13      0.021       (  0.186)       0.017        0.004
235  19.58     0.10      0.016       (  0.185)       0.013        0.003
236  19.67     0.10      0.016       (  0.185)       0.013        0.003
237  19.75     0.10      0.016       (  0.184)       0.013        0.003
238  19.83     0.07      0.010       (  0.183)       0.009        0.002
239  19.92     0.07      0.010       (  0.182)       0.009        0.002
240  20.00     0.07      0.010       (  0.181)       0.009        0.002
241  20.08     0.10      0.016       (  0.181)       0.013        0.003
242  20.17     0.10      0.016       (  0.180)       0.013        0.003
243  20.25     0.10      0.016       (  0.179)       0.013        0.003
244  20.33     0.10      0.016       (  0.178)       0.013        0.003
245  20.42     0.10      0.016       (  0.177)       0.013        0.003
246  20.50     0.10      0.016       (  0.177)       0.013        0.003
247  20.58     0.10      0.016       (  0.176)       0.013        0.003
248  20.67     0.10      0.016       (  0.175)       0.013        0.003
249  20.75     0.10      0.016       (  0.174)       0.013        0.003
250  20.83     0.07      0.010       (  0.174)       0.009        0.002
251  20.92     0.07      0.010       (  0.173)       0.009        0.002
252  21.00     0.07      0.010       (  0.172)       0.009        0.002
253  21.08     0.10      0.016       (  0.172)       0.013        0.003
254  21.17     0.10      0.016       (  0.171)       0.013        0.003
255  21.25     0.10      0.016       (  0.170)       0.013        0.003
256  21.33     0.07      0.010       (  0.170)       0.009        0.002
257  21.42     0.07      0.010       (  0.169)       0.009        0.002
258  21.50     0.07      0.010       (  0.168)       0.009        0.002
259  21.58     0.10      0.016       (  0.168)       0.013        0.003
260  21.67     0.10      0.016       (  0.167)       0.013        0.003
261  21.75     0.10      0.016       (  0.167)       0.013        0.003
262  21.83     0.07      0.010       (  0.166)       0.009        0.002
263  21.92     0.07      0.010       (  0.165)       0.009        0.002
264  22.00     0.07      0.010       (  0.165)       0.009        0.002
265  22.08     0.10      0.016       (  0.164)       0.013        0.003
266  22.17     0.10      0.016       (  0.164)       0.013        0.003
267  22.25     0.10      0.016       (  0.163)       0.013        0.003
268  22.33     0.07      0.010       (  0.163)       0.009        0.002
269  22.42     0.07      0.010       (  0.162)       0.009        0.002
270  22.50     0.07      0.010       (  0.162)       0.009        0.002
271  22.58     0.07      0.010       (  0.161)       0.009        0.002
272  22.67     0.07      0.010       (  0.161)       0.009        0.002
273  22.75     0.07      0.010       (  0.160)       0.009        0.002
274  22.83     0.07      0.010       (  0.160)       0.009        0.002
275  22.92     0.07      0.010       (  0.160)       0.009        0.002
276  23.00     0.07      0.010       (  0.159)       0.009        0.002
277  23.08     0.07      0.010       (  0.159)       0.009        0.002
278  23.17     0.07      0.010       (  0.158)       0.009        0.002
279  23.25     0.07      0.010       (  0.158)       0.009        0.002
280  23.33     0.07      0.010       (  0.158)       0.009        0.002
281  23.42     0.07      0.010       (  0.158)       0.009        0.002
282  23.50     0.07      0.010       (  0.157)       0.009        0.002
283  23.58     0.07      0.010       (  0.157)       0.009        0.002
284  23.67     0.07      0.010       (  0.157)       0.009        0.002
285  23.75     0.07      0.010       (  0.157)       0.009        0.002
286  23.83     0.07      0.010       (  0.156)       0.009        0.002
287  23.92     0.07      0.010       (  0.156)       0.009        0.002
288  24.00     0.07      0.010       (  0.156)       0.009        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     2.8
       Flood volume = Effective rainfall      0.23(In)
        times area      41.2(Ac.)/[(In)/(Ft.)] =       0.8(Ac.Ft)
       Total soil loss =      1.07(In)
       Total soil loss =     3.660(Ac.Ft)
       Total rainfall =      1.30(In)
       Flood volume =       34993.3 Cubic Feet
       Total soil loss =      159413.9 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      1.304(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
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R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0003	0.04	Q				
0+15	0.0007	0.06	Q				
0+20	0.0012	0.07	Q				
0+25	0.0018	0.09	Q				
0+30	0.0024	0.10	Q				
0+35	0.0032	0.10	Q				
0+40	0.0039	0.11	Q				
0+45	0.0047	0.11	Q				
0+50	0.0055	0.12	Q				
0+55	0.0064	0.13	Q				
1+ 0	0.0074	0.14	Q				
1+ 5	0.0084	0.14	Q				
1+10	0.0093	0.13	Q				
1+15	0.0101	0.12	Q				
1+20	0.0110	0.12	Q				
1+25	0.0118	0.12	Q				
1+30	0.0126	0.12	Q				
1+35	0.0134	0.12	Q				
1+40	0.0143	0.12	Q				
1+45	0.0151	0.12	Q				
1+50	0.0159	0.12	Q				
1+55	0.0168	0.14	Q				
2+ 0	0.0178	0.14	Q				
2+ 5	0.0189	0.15	Q				
2+10	0.0199	0.15	Q				
2+15	0.0209	0.15	QV				
2+20	0.0220	0.15	QV				
2+25	0.0231	0.15	QV				
2+30	0.0241	0.15	QV				
2+35	0.0252	0.16	QV				
2+40	0.0264	0.17	QV				
2+45	0.0277	0.18	QV				
2+50	0.0290	0.19	QV				
2+55	0.0303	0.19	QV				
3+ 0	0.0316	0.19	QV				
3+ 5	0.0329	0.19	QV				
3+10	0.0342	0.19	QV				
3+15	0.0356	0.19	QV				
3+20	0.0369	0.19	QV				
3+25	0.0382	0.19	QV				
3+30	0.0396	0.19	QV				
3+35	0.0409	0.19	Q V				
3+40	0.0423	0.19	Q V				
3+45	0.0436	0.19	Q V				
3+50	0.0450	0.20	Q V				
3+55	0.0464	0.21	Q V				
4+ 0	0.0480	0.22	Q V				
4+ 5	0.0495	0.23	Q V				
4+10	0.0511	0.23	Q V				
4+15	0.0527	0.23	Q V				
4+20	0.0543	0.23	Q V				
4+25	0.0560	0.25	|QV				
4+30	0.0578	0.26	|QV				
4+35	0.0596	0.26	|QV				
4+40	0.0615	0.27	|Q V				
4+45	0.0633	0.27	|Q V				
4+50	0.0652	0.27	|Q V				
4+55	0.0672	0.29	|Q V				
5+ 0	0.0693	0.30	|Q V				
5+ 5	0.0713	0.30	|Q V				
5+10	0.0731	0.27	|Q V				

5+15	0.0749	0.25	Q V			
5+20	0.0766	0.25	Q V			
5+25	0.0784	0.26	Q V			
5+30	0.0802	0.27	Q V			
5+35	0.0821	0.27	Q V			
5+40	0.0841	0.29	Q V			
5+45	0.0862	0.30	Q V			
5+50	0.0882	0.30	Q V			
5+55	0.0903	0.31	Q V			
6+ 0	0.0925	0.31	Q V			
6+ 5	0.0946	0.31	Q V			
6+10	0.0969	0.33	Q V			
6+15	0.0992	0.34	Q V			
6+20	0.1015	0.34	Q V			
6+25	0.1039	0.34	Q V			
6+30	0.1063	0.35	Q V			
6+35	0.1087	0.35	Q V			
6+40	0.1113	0.37	Q V			
6+45	0.1138	0.38	Q V			
6+50	0.1165	0.38	Q V			
6+55	0.1191	0.38	Q V			
7+ 0	0.1218	0.39	Q V			
7+ 5	0.1244	0.39	Q V			
7+10	0.1271	0.39	Q V			
7+15	0.1298	0.39	Q V			
7+20	0.1325	0.39	Q V			
7+25	0.1353	0.41	Q V			
7+30	0.1381	0.42	Q V			
7+35	0.1411	0.42	Q V			
7+40	0.1441	0.44	Q V			
7+45	0.1472	0.45	Q V			
7+50	0.1504	0.46	Q V			
7+55	0.1537	0.48	Q V			
8+ 0	0.1571	0.49	Q V			
8+ 5	0.1605	0.50	Q V			
8+10	0.1642	0.54	Q V			
8+15	0.1681	0.56	Q V			
8+20	0.1720	0.57	Q V			
8+25	0.1759	0.57	Q V			
8+30	0.1799	0.58	Q V			
8+35	0.1839	0.58	Q V			
8+40	0.1880	0.60	Q V			
8+45	0.1922	0.61	Q V			
8+50	0.1964	0.62	Q V			
8+55	0.2008	0.64	Q V			
9+ 0	0.2053	0.65	Q V			
9+ 5	0.2098	0.66	Q V			
9+10	0.2146	0.69	Q V			
9+15	0.2195	0.71	Q V			
9+20	0.2245	0.73	Q V			
9+25	0.2296	0.75	Q V			
9+30	0.2349	0.76	Q V			
9+35	0.2402	0.77	Q V			
9+40	0.2456	0.79	Q V			
9+45	0.2511	0.80	Q V			
9+50	0.2567	0.81	Q V			
9+55	0.2624	0.83	Q V			
10+ 0	0.2682	0.84	Q V			
10+ 5	0.2738	0.82	Q V			
10+10	0.2787	0.72	Q V			
10+15	0.2832	0.65	Q V			
10+20	0.2876	0.63	Q V			
10+25	0.2918	0.62	Q V			
10+30	0.2960	0.61	Q V			
10+35	0.3002	0.62	Q V			
10+40	0.3050	0.69	Q V			
10+45	0.3100	0.73	Q V			
10+50	0.3152	0.75	Q V			
10+55	0.3204	0.76	Q V			



16+45	0.7330	0.14	Q	|	|	|	V |
16+50	0.7339	0.13	Q	|	|	|	V |
16+55	0.7348	0.13	Q	|	|	|	V |
17+ 0	0.7356	0.12	Q	|	|	|	V |
17+ 5	0.7365	0.13	Q	|	|	|	V |
17+10	0.7376	0.16	Q	|	|	|	V |
17+15	0.7388	0.17	Q	|	|	|	V |
17+20	0.7400	0.18	Q	|	|	|	V |
17+25	0.7413	0.19	Q	|	|	|	V |
17+30	0.7426	0.19	Q	|	|	|	V |
17+35	0.7439	0.19	Q	|	|	|	V |
17+40	0.7452	0.19	Q	|	|	|	V |
17+45	0.7465	0.19	Q	|	|	|	V |
17+50	0.7478	0.19	Q	|	|	|	V |
17+55	0.7490	0.17	Q	|	|	|	V |
18+ 0	0.7502	0.17	Q	|	|	|	V |
18+ 5	0.7513	0.16	Q	|	|	|	V |
18+10	0.7524	0.16	Q	|	|	|	V |
18+15	0.7535	0.16	Q	|	|	|	V |
18+20	0.7546	0.16	Q	|	|	|	V |
18+25	0.7557	0.16	Q	|	|	|	V |
18+30	0.7567	0.16	Q	|	|	|	V |
18+35	0.7578	0.15	Q	|	|	|	V |
18+40	0.7587	0.14	Q	|	|	|	V |
18+45	0.7596	0.13	Q	|	|	|	V |
18+50	0.7604	0.12	Q	|	|	|	V |
18+55	0.7611	0.10	Q	|	|	|	V |
19+ 0	0.7618	0.09	Q	|	|	|	V |
19+ 5	0.7624	0.09	Q	|	|	|	V |
19+10	0.7631	0.10	Q	|	|	|	V |
19+15	0.7639	0.11	Q	|	|	|	V |
19+20	0.7647	0.12	Q	|	|	|	V |
19+25	0.7656	0.13	Q	|	|	|	V |
19+30	0.7666	0.14	Q	|	|	|	V |
19+35	0.7676	0.14	Q	|	|	|	V |
19+40	0.7685	0.13	Q	|	|	|	V |
19+45	0.7693	0.12	Q	|	|	|	V |
19+50	0.7701	0.12	Q	|	|	|	V |
19+55	0.7708	0.10	Q	|	|	|	V |
20+ 0	0.7714	0.09	Q	|	|	|	V |
20+ 5	0.7720	0.09	Q	|	|	|	V |
20+10	0.7728	0.10	Q	|	|	|	V |
20+15	0.7735	0.11	Q	|	|	|	V |
20+20	0.7743	0.11	Q	|	|	|	V |
20+25	0.7751	0.11	Q	|	|	|	V |
20+30	0.7759	0.11	Q	|	|	|	V |
20+35	0.7767	0.11	Q	|	|	|	V |
20+40	0.7774	0.12	Q	|	|	|	V |
20+45	0.7782	0.12	Q	|	|	|	V |
20+50	0.7790	0.11	Q	|	|	|	V |
20+55	0.7797	0.10	Q	|	|	|	V |
21+ 0	0.7803	0.09	Q	|	|	|	V |
21+ 5	0.7809	0.09	Q	|	|	|	V |
21+10	0.7816	0.10	Q	|	|	|	V |
21+15	0.7824	0.11	Q	|	|	|	V |
21+20	0.7831	0.11	Q	|	|	|	V |
21+25	0.7838	0.09	Q	|	|	|	V|
21+30	0.7843	0.09	Q	|	|	|	V|
21+35	0.7849	0.09	Q	|	|	|	V|
21+40	0.7856	0.10	Q	|	|	|	V|
21+45	0.7864	0.11	Q	|	|	|	V|
21+50	0.7871	0.11	Q	|	|	|	V|
21+55	0.7878	0.09	Q	|	|	|	V|
22+ 0	0.7884	0.09	Q	|	|	|	V|
22+ 5	0.7890	0.09	Q	|	|	|	V|
22+10	0.7897	0.10	Q	|	|	|	V|
22+15	0.7904	0.11	Q	|	|	|	V|
22+20	0.7911	0.11	Q	|	|	|	V|
22+25	0.7918	0.09	Q	|	|	|	V|

```
  22+30       0.7924      0.09  Q        |         |         |        V|
  22+35       0.7930      0.08  Q        |         |         |        V|
  22+40       0.7935      0.08  Q        |         |         |        V|
  22+45       0.7941      0.08  Q        |         |         |        V|
  22+50       0.7946      0.08  Q        |         |         |        V|
  22+55       0.7952      0.08  Q        |         |         |        V|
  23+ 0       0.7957      0.08  Q        |         |         |        V|
  23+ 5       0.7962      0.08  Q        |         |         |        V|
  23+10       0.7968      0.08  Q        |         |         |        V|
  23+15       0.7973      0.08  Q        |         |         |        V|
  23+20       0.7979      0.08  Q        |         |         |        V|
  23+25       0.7984      0.08  Q        |         |         |        V|
  23+30       0.7989      0.08  Q        |         |         |        V|
  23+35       0.7995      0.08  Q        |         |         |        V|
  23+40       0.8000      0.08  Q        |         |         |        V|
  23+45       0.8005      0.08  Q        |         |         |        V|
  23+50       0.8011      0.08  Q        |         |         |        V|
  23+55       0.8016      0.08  Q        |         |         |        V|
  24+ 0       0.8021      0.08  Q        |         |         |        V|
  24+ 5       0.8026      0.07  Q        |         |         |        V|
  24+10       0.8029      0.04  Q        |         |         |        V|
  24+15       0.8030      0.02  Q        |         |         |        V|
  24+20       0.8031      0.01  Q        |         |         |        V|
  24+25       0.8032      0.01  Q        |         |         |        V|
  24+30       0.8033      0.01  Q        |         |         |        V|
  24+35       0.8033      0.00  Q        |         |         |        V|
  24+40       0.8033      0.00  Q        |         |         |        V|
  24+45       0.8033      0.00  Q        |         |         |        V|
  24+50       0.8033      0.00  Q        |         |         |        V|
  24+55       0.8033      0.00  Q        |         |         |         V
-------------------------------------------------------------------------
```

PROPOSED CONDITION 2-YEAR, 24-HOUR UNIT HYDROGRAPH

U n i t H y d r o g r a p h A n a l y s i s

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Study date 09/24/24 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6584

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

24-0564 - HERITAGE VALLEY BUSINESS CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR 24-HOUR
FN: ONSITEPROP242.OUT- MJS

Drainage Area = 41.20(Ac.) = 0.064 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 41.20(Ac.) = 0.064 Sq. Mi.
Length along longest watercourse = 3142.00(Ft.)
Length along longest watercourse measured to centroid = 673.00(Ft.)
Length along longest watercourse = 0.595 Mi.
Length along longest watercourse measured to centroid = 0.127 Mi.
Difference in elevation = 17.40(Ft.)
Slope along watercourse = 29.2400 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.071 Hr.
Lag time = 4.27 Min.
25% of lag time = 1.07 Min.
40% of lag time = 1.71 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	1.60	65.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	4.50	185.40

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.600(In)
Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.600(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
   41.200           69.00         0.900
 Total Area Entered =     41.20(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  49.8      0.574     0.900        0.109       1.000      0.109
                                                 Sum (F) =   0.109
Area averaged mean soil loss (F) (In/Hr) =  0.109
Minimum soil loss rate ((In/Hr)) =  0.055
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.180
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        117.130         24.362             10.116
    2   0.167        234.261         48.793             20.260
    3   0.250        351.391         13.567              5.633
    4   0.333        468.522          6.173              2.563
    5   0.417        585.652          3.446              1.431
    6   0.500        702.782          2.028              0.842
    7   0.583        819.913          1.632              0.678
                              Sum = 100.000   Sum=      41.522
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
    1   0.08     0.07      0.013       (  0.193)       0.002        0.010
    2   0.17     0.07      0.013       (  0.193)       0.002        0.010
    3   0.25     0.07      0.013       (  0.192)       0.002        0.010
    4   0.33     0.10      0.019       (  0.191)       0.003        0.016
    5   0.42     0.10      0.019       (  0.190)       0.003        0.016
    6   0.50     0.10      0.019       (  0.190)       0.003        0.016
    7   0.58     0.10      0.019       (  0.189)       0.003        0.016
    8   0.67     0.10      0.019       (  0.188)       0.003        0.016
    9   0.75     0.10      0.019       (  0.187)       0.003        0.016
   10   0.83     0.13      0.026       (  0.187)       0.005        0.021
   11   0.92     0.13      0.026       (  0.186)       0.005        0.021
   12   1.00     0.13      0.026       (  0.185)       0.005        0.021
   13   1.08     0.10      0.019       (  0.184)       0.003        0.016
   14   1.17     0.10      0.019       (  0.184)       0.003        0.016
   15   1.25     0.10      0.019       (  0.183)       0.003        0.016
   16   1.33     0.10      0.019       (  0.182)       0.003        0.016
   17   1.42     0.10      0.019       (  0.182)       0.003        0.016
   18   1.50     0.10      0.019       (  0.181)       0.003        0.016
   19   1.58     0.10      0.019       (  0.180)       0.003        0.016
   20   1.67     0.10      0.019       (  0.179)       0.003        0.016
   21   1.75     0.10      0.019       (  0.179)       0.003        0.016
   22   1.83     0.13      0.026       (  0.178)       0.005        0.021
   23   1.92     0.13      0.026       (  0.177)       0.005        0.021
   24   2.00     0.13      0.026       (  0.176)       0.005        0.021
   25   2.08     0.13      0.026       (  0.176)       0.005        0.021
   26   2.17     0.13      0.026       (  0.175)       0.005        0.021
   27   2.25     0.13      0.026       (  0.174)       0.005        0.021
   28   2.33     0.13      0.026       (  0.174)       0.005        0.021
   29   2.42     0.13      0.026       (  0.173)       0.005        0.021
   30   2.50     0.13      0.026       (  0.172)       0.005        0.021
   31   2.58     0.17      0.032       (  0.172)       0.006        0.026
```

32	2.67	0.17	0.032	(0.171)	0.006	0.026
33	2.75	0.17	0.032	(0.170)	0.006	0.026
34	2.83	0.17	0.032	(0.169)	0.006	0.026
35	2.92	0.17	0.032	(0.169)	0.006	0.026
36	3.00	0.17	0.032	(0.168)	0.006	0.026
37	3.08	0.17	0.032	(0.167)	0.006	0.026
38	3.17	0.17	0.032	(0.167)	0.006	0.026
39	3.25	0.17	0.032	(0.166)	0.006	0.026
40	3.33	0.17	0.032	(0.165)	0.006	0.026
41	3.42	0.17	0.032	(0.165)	0.006	0.026
42	3.50	0.17	0.032	(0.164)	0.006	0.026
43	3.58	0.17	0.032	(0.163)	0.006	0.026
44	3.67	0.17	0.032	(0.162)	0.006	0.026
45	3.75	0.17	0.032	(0.162)	0.006	0.026
46	3.83	0.20	0.038	(0.161)	0.007	0.031
47	3.92	0.20	0.038	(0.160)	0.007	0.031
48	4.00	0.20	0.038	(0.160)	0.007	0.031
49	4.08	0.20	0.038	(0.159)	0.007	0.031
50	4.17	0.20	0.038	(0.158)	0.007	0.031
51	4.25	0.20	0.038	(0.158)	0.007	0.031
52	4.33	0.23	0.045	(0.157)	0.008	0.037
53	4.42	0.23	0.045	(0.156)	0.008	0.037
54	4.50	0.23	0.045	(0.156)	0.008	0.037
55	4.58	0.23	0.045	(0.155)	0.008	0.037
56	4.67	0.23	0.045	(0.154)	0.008	0.037
57	4.75	0.23	0.045	(0.154)	0.008	0.037
58	4.83	0.27	0.051	(0.153)	0.009	0.042
59	4.92	0.27	0.051	(0.152)	0.009	0.042
60	5.00	0.27	0.051	(0.152)	0.009	0.042
61	5.08	0.20	0.038	(0.151)	0.007	0.031
62	5.17	0.20	0.038	(0.150)	0.007	0.031
63	5.25	0.20	0.038	(0.150)	0.007	0.031
64	5.33	0.23	0.045	(0.149)	0.008	0.037
65	5.42	0.23	0.045	(0.148)	0.008	0.037
66	5.50	0.23	0.045	(0.148)	0.008	0.037
67	5.58	0.27	0.051	(0.147)	0.009	0.042
68	5.67	0.27	0.051	(0.147)	0.009	0.042
69	5.75	0.27	0.051	(0.146)	0.009	0.042
70	5.83	0.27	0.051	(0.145)	0.009	0.042
71	5.92	0.27	0.051	(0.145)	0.009	0.042
72	6.00	0.27	0.051	(0.144)	0.009	0.042
73	6.08	0.30	0.058	(0.143)	0.010	0.047
74	6.17	0.30	0.058	(0.143)	0.010	0.047
75	6.25	0.30	0.058	(0.142)	0.010	0.047
76	6.33	0.30	0.058	(0.141)	0.010	0.047
77	6.42	0.30	0.058	(0.141)	0.010	0.047
78	6.50	0.30	0.058	(0.140)	0.010	0.047
79	6.58	0.33	0.064	(0.140)	0.012	0.052
80	6.67	0.33	0.064	(0.139)	0.012	0.052
81	6.75	0.33	0.064	(0.138)	0.012	0.052
82	6.83	0.33	0.064	(0.138)	0.012	0.052
83	6.92	0.33	0.064	(0.137)	0.012	0.052
84	7.00	0.33	0.064	(0.136)	0.012	0.052
85	7.08	0.33	0.064	(0.136)	0.012	0.052
86	7.17	0.33	0.064	(0.135)	0.012	0.052
87	7.25	0.33	0.064	(0.135)	0.012	0.052
88	7.33	0.37	0.070	(0.134)	0.013	0.058
89	7.42	0.37	0.070	(0.133)	0.013	0.058
90	7.50	0.37	0.070	(0.133)	0.013	0.058
91	7.58	0.40	0.077	(0.132)	0.014	0.063
92	7.67	0.40	0.077	(0.131)	0.014	0.063
93	7.75	0.40	0.077	(0.131)	0.014	0.063
94	7.83	0.43	0.083	(0.130)	0.015	0.068
95	7.92	0.43	0.083	(0.130)	0.015	0.068
96	8.00	0.43	0.083	(0.129)	0.015	0.068
97	8.08	0.50	0.096	(0.128)	0.017	0.079
98	8.17	0.50	0.096	(0.128)	0.017	0.079
99	8.25	0.50	0.096	(0.127)	0.017	0.079
100	8.33	0.50	0.096	(0.127)	0.017	0.079

101	8.42	0.50	0.096	(0.126)	0.017	0.079
102	8.50	0.50	0.096	(0.125)	0.017	0.079
103	8.58	0.53	0.102	(0.125)	0.018	0.084
104	8.67	0.53	0.102	(0.124)	0.018	0.084
105	8.75	0.53	0.102	(0.124)	0.018	0.084
106	8.83	0.57	0.109	(0.123)	0.020	0.089
107	8.92	0.57	0.109	(0.123)	0.020	0.089
108	9.00	0.57	0.109	(0.122)	0.020	0.089
109	9.08	0.63	0.122	(0.121)	0.022	0.100
110	9.17	0.63	0.122	(0.121)	0.022	0.100
111	9.25	0.63	0.122	(0.120)	0.022	0.100
112	9.33	0.67	0.128	(0.120)	0.023	0.105
113	9.42	0.67	0.128	(0.119)	0.023	0.105
114	9.50	0.67	0.128	(0.119)	0.023	0.105
115	9.58	0.70	0.134	(0.118)	0.024	0.110
116	9.67	0.70	0.134	(0.117)	0.024	0.110
117	9.75	0.70	0.134	(0.117)	0.024	0.110
118	9.83	0.73	0.141	(0.116)	0.025	0.115
119	9.92	0.73	0.141	(0.116)	0.025	0.115
120	10.00	0.73	0.141	(0.115)	0.025	0.115
121	10.08	0.50	0.096	(0.115)	0.017	0.079
122	10.17	0.50	0.096	(0.114)	0.017	0.079
123	10.25	0.50	0.096	(0.113)	0.017	0.079
124	10.33	0.50	0.096	(0.113)	0.017	0.079
125	10.42	0.50	0.096	(0.112)	0.017	0.079
126	10.50	0.50	0.096	(0.112)	0.017	0.079
127	10.58	0.67	0.128	(0.111)	0.023	0.105
128	10.67	0.67	0.128	(0.111)	0.023	0.105
129	10.75	0.67	0.128	(0.110)	0.023	0.105
130	10.83	0.67	0.128	(0.110)	0.023	0.105
131	10.92	0.67	0.128	(0.109)	0.023	0.105
132	11.00	0.67	0.128	(0.109)	0.023	0.105
133	11.08	0.63	0.122	(0.108)	0.022	0.100
134	11.17	0.63	0.122	(0.108)	0.022	0.100
135	11.25	0.63	0.122	(0.107)	0.022	0.100
136	11.33	0.63	0.122	(0.106)	0.022	0.100
137	11.42	0.63	0.122	(0.106)	0.022	0.100
138	11.50	0.63	0.122	(0.105)	0.022	0.100
139	11.58	0.57	0.109	(0.105)	0.020	0.089
140	11.67	0.57	0.109	(0.104)	0.020	0.089
141	11.75	0.57	0.109	(0.104)	0.020	0.089
142	11.83	0.60	0.115	(0.103)	0.021	0.094
143	11.92	0.60	0.115	(0.103)	0.021	0.094
144	12.00	0.60	0.115	(0.102)	0.021	0.094
145	12.08	0.83	0.160	(0.102)	0.029	0.131
146	12.17	0.83	0.160	(0.101)	0.029	0.131
147	12.25	0.83	0.160	(0.101)	0.029	0.131
148	12.33	0.87	0.166	(0.100)	0.030	0.136
149	12.42	0.87	0.166	(0.100)	0.030	0.136
150	12.50	0.87	0.166	(0.099)	0.030	0.136
151	12.58	0.93	0.179	(0.099)	0.032	0.147
152	12.67	0.93	0.179	(0.098)	0.032	0.147
153	12.75	0.93	0.179	(0.098)	0.032	0.147
154	12.83	0.97	0.186	(0.097)	0.033	0.152
155	12.92	0.97	0.186	(0.097)	0.033	0.152
156	13.00	0.97	0.186	(0.096)	0.033	0.152
157	13.08	1.13	0.218	(0.096)	0.039	0.178
158	13.17	1.13	0.218	(0.095)	0.039	0.178
159	13.25	1.13	0.218	(0.095)	0.039	0.178
160	13.33	1.13	0.218	(0.094)	0.039	0.178
161	13.42	1.13	0.218	(0.094)	0.039	0.178
162	13.50	1.13	0.218	(0.093)	0.039	0.178
163	13.58	0.77	0.147	(0.093)	0.026	0.121
164	13.67	0.77	0.147	(0.092)	0.026	0.121
165	13.75	0.77	0.147	(0.092)	0.026	0.121
166	13.83	0.77	0.147	(0.092)	0.026	0.121
167	13.92	0.77	0.147	(0.091)	0.026	0.121
168	14.00	0.77	0.147	(0.091)	0.026	0.121
169	14.08	0.90	0.173	(0.090)	0.031	0.142

170	14.17	0.90	0.173	(0.090)	0.031	0.142
171	14.25	0.90	0.173	(0.089)	0.031	0.142
172	14.33	0.87	0.166	(0.089)	0.030	0.136
173	14.42	0.87	0.166	(0.088)	0.030	0.136
174	14.50	0.87	0.166	(0.088)	0.030	0.136
175	14.58	0.87	0.166	(0.087)	0.030	0.136
176	14.67	0.87	0.166	(0.087)	0.030	0.136
177	14.75	0.87	0.166	(0.086)	0.030	0.136
178	14.83	0.83	0.160	(0.086)	0.029	0.131
179	14.92	0.83	0.160	(0.086)	0.029	0.131
180	15.00	0.83	0.160	(0.085)	0.029	0.131
181	15.08	0.80	0.154	(0.085)	0.028	0.126
182	15.17	0.80	0.154	(0.084)	0.028	0.126
183	15.25	0.80	0.154	(0.084)	0.028	0.126
184	15.33	0.77	0.147	(0.083)	0.026	0.121
185	15.42	0.77	0.147	(0.083)	0.026	0.121
186	15.50	0.77	0.147	(0.083)	0.026	0.121
187	15.58	0.63	0.122	(0.082)	0.022	0.100
188	15.67	0.63	0.122	(0.082)	0.022	0.100
189	15.75	0.63	0.122	(0.081)	0.022	0.100
190	15.83	0.63	0.122	(0.081)	0.022	0.100
191	15.92	0.63	0.122	(0.080)	0.022	0.100
192	16.00	0.63	0.122	(0.080)	0.022	0.100
193	16.08	0.13	0.026	(0.080)	0.005	0.021
194	16.17	0.13	0.026	(0.079)	0.005	0.021
195	16.25	0.13	0.026	(0.079)	0.005	0.021
196	16.33	0.13	0.026	(0.078)	0.005	0.021
197	16.42	0.13	0.026	(0.078)	0.005	0.021
198	16.50	0.13	0.026	(0.078)	0.005	0.021
199	16.58	0.10	0.019	(0.077)	0.003	0.016
200	16.67	0.10	0.019	(0.077)	0.003	0.016
201	16.75	0.10	0.019	(0.076)	0.003	0.016
202	16.83	0.10	0.019	(0.076)	0.003	0.016
203	16.92	0.10	0.019	(0.076)	0.003	0.016
204	17.00	0.10	0.019	(0.075)	0.003	0.016
205	17.08	0.17	0.032	(0.075)	0.006	0.026
206	17.17	0.17	0.032	(0.075)	0.006	0.026
207	17.25	0.17	0.032	(0.074)	0.006	0.026
208	17.33	0.17	0.032	(0.074)	0.006	0.026
209	17.42	0.17	0.032	(0.073)	0.006	0.026
210	17.50	0.17	0.032	(0.073)	0.006	0.026
211	17.58	0.17	0.032	(0.073)	0.006	0.026
212	17.67	0.17	0.032	(0.072)	0.006	0.026
213	17.75	0.17	0.032	(0.072)	0.006	0.026
214	17.83	0.13	0.026	(0.072)	0.005	0.021
215	17.92	0.13	0.026	(0.071)	0.005	0.021
216	18.00	0.13	0.026	(0.071)	0.005	0.021
217	18.08	0.13	0.026	(0.071)	0.005	0.021
218	18.17	0.13	0.026	(0.070)	0.005	0.021
219	18.25	0.13	0.026	(0.070)	0.005	0.021
220	18.33	0.13	0.026	(0.070)	0.005	0.021
221	18.42	0.13	0.026	(0.069)	0.005	0.021
222	18.50	0.13	0.026	(0.069)	0.005	0.021
223	18.58	0.10	0.019	(0.069)	0.003	0.016
224	18.67	0.10	0.019	(0.068)	0.003	0.016
225	18.75	0.10	0.019	(0.068)	0.003	0.016
226	18.83	0.07	0.013	(0.068)	0.002	0.010
227	18.92	0.07	0.013	(0.067)	0.002	0.010
228	19.00	0.07	0.013	(0.067)	0.002	0.010
229	19.08	0.10	0.019	(0.067)	0.003	0.016
230	19.17	0.10	0.019	(0.066)	0.003	0.016
231	19.25	0.10	0.019	(0.066)	0.003	0.016
232	19.33	0.13	0.026	(0.066)	0.005	0.021
233	19.42	0.13	0.026	(0.065)	0.005	0.021
234	19.50	0.13	0.026	(0.065)	0.005	0.021
235	19.58	0.10	0.019	(0.065)	0.003	0.016
236	19.67	0.10	0.019	(0.064)	0.003	0.016
237	19.75	0.10	0.019	(0.064)	0.003	0.016
238	19.83	0.07	0.013	(0.064)	0.002	0.010

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239  19.92     0.07      0.013       (  0.064)       0.002        0.010
240  20.00     0.07      0.013       (  0.063)       0.002        0.010
241  20.08     0.10      0.019       (  0.063)       0.003        0.016
242  20.17     0.10      0.019       (  0.063)       0.003        0.016
243  20.25     0.10      0.019       (  0.062)       0.003        0.016
244  20.33     0.10      0.019       (  0.062)       0.003        0.016
245  20.42     0.10      0.019       (  0.062)       0.003        0.016
246  20.50     0.10      0.019       (  0.062)       0.003        0.016
247  20.58     0.10      0.019       (  0.061)       0.003        0.016
248  20.67     0.10      0.019       (  0.061)       0.003        0.016
249  20.75     0.10      0.019       (  0.061)       0.003        0.016
250  20.83     0.07      0.013       (  0.061)       0.002        0.010
251  20.92     0.07      0.013       (  0.060)       0.002        0.010
252  21.00     0.07      0.013       (  0.060)       0.002        0.010
253  21.08     0.10      0.019       (  0.060)       0.003        0.016
254  21.17     0.10      0.019       (  0.060)       0.003        0.016
255  21.25     0.10      0.019       (  0.059)       0.003        0.016
256  21.33     0.07      0.013       (  0.059)       0.002        0.010
257  21.42     0.07      0.013       (  0.059)       0.002        0.010
258  21.50     0.07      0.013       (  0.059)       0.002        0.010
259  21.58     0.10      0.019       (  0.059)       0.003        0.016
260  21.67     0.10      0.019       (  0.058)       0.003        0.016
261  21.75     0.10      0.019       (  0.058)       0.003        0.016
262  21.83     0.07      0.013       (  0.058)       0.002        0.010
263  21.92     0.07      0.013       (  0.058)       0.002        0.010
264  22.00     0.07      0.013       (  0.058)       0.002        0.010
265  22.08     0.10      0.019       (  0.057)       0.003        0.016
266  22.17     0.10      0.019       (  0.057)       0.003        0.016
267  22.25     0.10      0.019       (  0.057)       0.003        0.016
268  22.33     0.07      0.013       (  0.057)       0.002        0.010
269  22.42     0.07      0.013       (  0.057)       0.002        0.010
270  22.50     0.07      0.013       (  0.057)       0.002        0.010
271  22.58     0.07      0.013       (  0.056)       0.002        0.010
272  22.67     0.07      0.013       (  0.056)       0.002        0.010
273  22.75     0.07      0.013       (  0.056)       0.002        0.010
274  22.83     0.07      0.013       (  0.056)       0.002        0.010
275  22.92     0.07      0.013       (  0.056)       0.002        0.010
276  23.00     0.07      0.013       (  0.056)       0.002        0.010
277  23.08     0.07      0.013       (  0.055)       0.002        0.010
278  23.17     0.07      0.013       (  0.055)       0.002        0.010
279  23.25     0.07      0.013       (  0.055)       0.002        0.010
280  23.33     0.07      0.013       (  0.055)       0.002        0.010
281  23.42     0.07      0.013       (  0.055)       0.002        0.010
282  23.50     0.07      0.013       (  0.055)       0.002        0.010
283  23.58     0.07      0.013       (  0.055)       0.002        0.010
284  23.67     0.07      0.013       (  0.055)       0.002        0.010
285  23.75     0.07      0.013       (  0.055)       0.002        0.010
286  23.83     0.07      0.013       (  0.055)       0.002        0.010
287  23.92     0.07      0.013       (  0.055)       0.002        0.010
288  24.00     0.07      0.013       (  0.055)       0.002        0.010
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    15.7
       Flood volume = Effective rainfall      1.31(In)
        times area      41.2(Ac.)/[(In)/(Ft.)] =       4.5(Ac.Ft)
       Total soil loss =      0.29(In)
       Total soil loss =     0.989(Ac.Ft)
       Total rainfall =      1.60(In)
       Flood volume =      196201.7 Cubic Feet
       Total soil loss =       43068.7 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      7.394(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.11	Q				
0+10	0.0029	0.32	VQ				
0+15	0.0055	0.38	VQ				
0+20	0.0087	0.46	VQ				
0+25	0.0127	0.58	V Q				
0+30	0.0169	0.62	V Q				
0+35	0.0213	0.64	V Q				
0+40	0.0258	0.65	V Q				
0+45	0.0303	0.65	V Q				
0+50	0.0351	0.71	V Q				
0+55	0.0407	0.81	V Q				
1+ 0	0.0465	0.84	V Q				
1+ 5	0.0521	0.80	V Q				
1+10	0.0569	0.70	V Q				
1+15	0.0616	0.68	V Q				
1+20	0.0662	0.67	V Q				
1+25	0.0708	0.66	V Q				
1+30	0.0753	0.66	V Q				
1+35	0.0798	0.65	V Q				
1+40	0.0843	0.65	V Q				
1+45	0.0888	0.65	V Q				
1+50	0.0937	0.71	V Q				
1+55	0.0993	0.81	V Q				
2+ 0	0.1051	0.84	V Q				
2+ 5	0.1110	0.86	V Q				
2+10	0.1169	0.86	|V Q				
2+15	0.1229	0.87	|V Q				
2+20	0.1289	0.87	|V Q				
2+25	0.1349	0.87	|V Q				
2+30	0.1409	0.87	|V Q				
2+35	0.1473	0.93	|V Q				
2+40	0.1544	1.03	|V Q				
2+45	0.1617	1.06	|V Q				
2+50	0.1691	1.07	|V Q				
2+55	0.1766	1.08	|V Q				
3+ 0	0.1841	1.09	|V Q				
3+ 5	0.1916	1.09	|V Q				
3+10	0.1991	1.09	|V Q				
3+15	0.2066	1.09	|V Q				
3+20	0.2141	1.09	|V Q				
3+25	0.2216	1.09	|V Q				
3+30	0.2291	1.09	| V Q				
3+35	0.2366	1.09	| V Q				
3+40	0.2441	1.09	| V Q				
3+45	0.2516	1.09	| V Q				
3+50	0.2595	1.14	| V Q				
3+55	0.2681	1.25	| V Q				
4+ 0	0.2769	1.28	| V Q				
4+ 5	0.2858	1.29	| V Q				
4+10	0.2948	1.30	| V Q				
4+15	0.3037	1.30	| V Q				
4+20	0.3131	1.36	| V Q				
4+25	0.3232	1.47	| V Q				
4+30	0.3335	1.50	| V Q				
4+35	0.3439	1.51	| V Q				
4+40	0.3544	1.52	| V Q				
4+45	0.3649	1.52	| V Q				
4+50	0.3758	1.58	| V Q				
4+55	0.3874	1.69	| V Q				
5+ 0	0.3992	1.72	| V Q				
5+ 5	0.4103	1.62	| V Q				
5+10	0.4201	1.42	| V Q				
5+15	0.4295	1.36	| V Q				
5+20	0.4391	1.39	| V Q				
5+25	0.4493	1.48	| V Q				
5+30	0.4597	1.50	| V Q				
5+35	0.4704	1.56	| V Q				

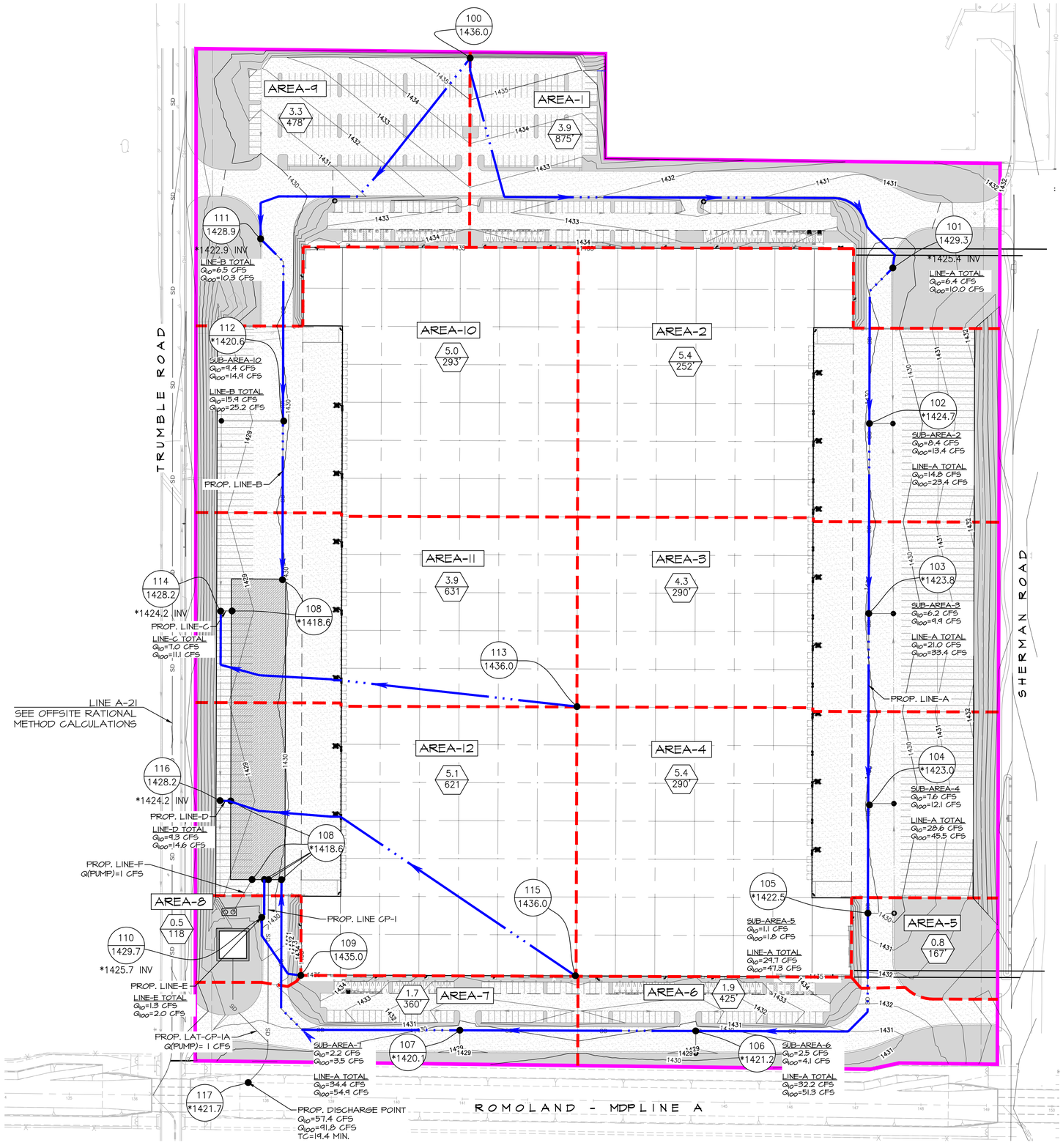
5+40	0.4820	1.68	V Q			
5+45	0.4938	1.71	V Q			
5+50	0.5057	1.73	V Q			
5+55	0.5176	1.74	V Q			
6+ 0	0.5296	1.74	V Q			
6+ 5	0.5420	1.80	V Q			
6+10	0.5551	1.90	V Q			
6+15	0.5684	1.93	V Q			
6+20	0.5818	1.95	V Q			
6+25	0.5953	1.95	V Q			
6+30	0.6088	1.96	V Q			
6+35	0.6226	2.02	V Q			
6+40	0.6373	2.12	V Q			
6+45	0.6521	2.15	V Q			
6+50	0.6670	2.16	V Q			
6+55	0.6819	2.17	V Q			
7+ 0	0.6969	2.18	V Q			
7+ 5	0.7119	2.18	V Q			
7+10	0.7269	2.18	V Q			
7+15	0.7420	2.18	V Q			
7+20	0.7573	2.23	V Q			
7+25	0.7735	2.34	V Q			
7+30	0.7898	2.37	V Q			
7+35	0.8065	2.44	V Q			
7+40	0.8241	2.55	V Q			
7+45	0.8419	2.58	V Q			
7+50	0.8602	2.65	V Q			
7+55	0.8792	2.77	V Q			
8+ 0	0.8985	2.80	V Q			
8+ 5	0.9187	2.92	V Q			
8+10	0.9403	3.15	V Q			
8+15	0.9624	3.21	V Q			
8+20	0.9847	3.24	V Q			
8+25	1.0071	3.25	V Q			
8+30	1.0296	3.26	V Q			
8+35	1.0525	3.32	V Q			
8+40	1.0761	3.43	V Q			
8+45	1.0999	3.46	V Q			
8+50	1.1242	3.53	V Q			
8+55	1.1493	3.64	V Q			
9+ 0	1.1746	3.67	V Q			
9+ 5	1.2007	3.80	V Q			
9+10	1.2284	4.02	V Q			
9+15	1.2565	4.08	V Q			
9+20	1.2852	4.16	V Q			
9+25	1.3147	4.29	V Q			
9+30	1.3445	4.32	V Q			
9+35	1.3748	4.40	V Q			
9+40	1.4058	4.51	V Q			
9+45	1.4371	4.55	V Q			
9+50	1.4689	4.62	V Q			
9+55	1.5015	4.73	V Q			
10+ 0	1.5343	4.76	V Q			
10+ 5	1.5647	4.41	V Q			
10+10	1.5900	3.67	Q			
10+15	1.6139	3.47	QV			
10+20	1.6371	3.38	QV			
10+25	1.6600	3.33	QV			
10+30	1.6827	3.29	QV			
10+35	1.7071	3.54	QV			
10+40	1.7351	4.07	VQ			
10+45	1.7641	4.22	VQ			
10+50	1.7936	4.28	V Q			
10+55	1.8234	4.32	VQ			
11+ 0	1.8533	4.34	VQ			
11+ 5	1.8829	4.31	VQ			
11+10	1.9119	4.20	Q			
11+15	1.9406	4.17	QV			
11+20	1.9692	4.16	QV			

11+25	1.9978	4.15	|	| QV |	|	|
11+30	2.0264	4.15	|	| QV |	|	|
11+35	2.0541	4.04	|	| Q V |	|	|
11+40	2.0805	3.82	|	| Q V |	|	|
11+45	2.1064	3.76	|	| Q V |	|	|
11+50	2.1325	3.79	|	| Q V |	|	|
11+55	2.1592	3.88	|	| Q V|	|	|
12+ 0	2.1861	3.90	|	| Q V|	|	|
12+ 5	2.2156	4.28	|	| Q V|	|	|
12+10	2.2502	5.03	|	| VQ	|	|
12+15	2.2864	5.24	|	| Q	|	|
12+20	2.3235	5.39	|	| VQ	|	|
12+25	2.3618	5.55	|	| V Q	|	|
12+30	2.4004	5.61	|	| |VQ	|	|
12+35	2.4401	5.76	|	| |V Q	|	|
12+40	2.4813	5.98	|	| | VQ	|	|
12+45	2.5229	6.04	|	| | V Q	|	|
12+50	2.5651	6.13	|	| | V Q	|	|
12+55	2.6081	6.25	|	| | VQ	|	|
13+ 0	2.6514	6.29	|	| | V Q	|	|
13+ 5	2.6967	6.57	|	| | V Q	|	|
13+10	2.7456	7.11	|	| | V Q |	|	|
13+15	2.7957	7.26	|	| | V Q|	|	|
13+20	2.8462	7.33	|	| | V Q|	|	|
13+25	2.8969	7.37	|	| | V Q|	|	|
13+30	2.9479	7.39	|	| | V Q|	|	|
13+35	2.9949	6.83	|	| | VQ |	|	|
13+40	3.0339	5.66	|	| | Q V |	|	|
13+45	3.0706	5.33	|	| |Q V |	|	|
13+50	3.1063	5.18	|	| Q V |	|	|
13+55	3.1414	5.10	|	| Q V |	|	|
14+ 0	3.1762	5.05	|	| Q V |	|	|
14+ 5	3.2122	5.23	|	| Q V |	|	|
14+10	3.2511	5.65	|	| | Q V |	|	|
14+15	3.2909	5.77	|	| | Q V|	|	|
14+20	3.3306	5.77	|	| | Q V|	|	|
14+25	3.3699	5.69	|	| | Q V|	|	|
14+30	3.4090	5.68	|	| | Q V	|	|
14+35	3.4481	5.68	|	| | Q V	|	|
14+40	3.4872	5.68	|	| | Q V	|	|
14+45	3.5263	5.67	|	| | Q |V	|	|
14+50	3.5650	5.61	|	| | Q |V	|	|
14+55	3.6029	5.51	|	| | Q |V	|	|
15+ 0	3.6406	5.48	|	| |Q | V	|	|
15+ 5	3.6779	5.41	|	| |Q | V	|	|
15+10	3.7144	5.30	|	| |Q | V	|	|
15+15	3.7507	5.26	|	| |Q | V	|	|
15+20	3.7864	5.19	|	| Q | V	|	|
15+25	3.8214	5.08	|	| Q | V	|	|
15+30	3.8562	5.05	|	| Q | V	|	|
15+35	3.8893	4.82	|	| Q| | V	|	|
15+40	3.9195	4.38	|	| Q | | V	|	|
15+45	3.9489	4.26	|	| Q | | V	|	|
15+50	3.9778	4.20	|	| Q | | V	|	|
15+55	4.0066	4.17	|	| Q | | V	|	|
16+ 0	4.0352	4.16	|	| Q | | V	|	|
16+ 5	4.0583	3.35	|	| Q | | V	|	|
16+10	4.0703	1.75	|	Q | | V	|	|
16+15	4.0793	1.31	|	Q | | V	|	|
16+20	4.0869	1.10	|	Q | | V	|	|
16+25	4.0937	0.99	|	Q | | V	|	|
16+30	4.1001	0.93	|	Q | | V	|	|
16+35	4.1057	0.82	|	Q | | V	|	|
16+40	4.1107	0.71	|	Q | | V	|	|
16+45	4.1154	0.68	|	Q | | V	|	|
16+50	4.1200	0.67	|	Q | | V	|	|
16+55	4.1245	0.66	|	Q | | V	|	|
17+ 0	4.1291	0.66	|	Q | | V	|	|
17+ 5	4.1343	0.76	|	Q | | V	|	|

17+10	4.1410	0.97	Q			V
17+15	4.1481	1.03	Q			V
17+20	4.1554	1.06	Q			V
17+25	4.1628	1.07	Q			V
17+30	4.1702	1.08	Q			V
17+35	4.1778	1.09	Q			V
17+40	4.1853	1.09	Q			V
17+45	4.1928	1.09	Q			V
17+50	4.1999	1.04	Q			V
17+55	4.2063	0.93	Q			V
18+ 0	4.2125	0.90	Q			V
18+ 5	4.2186	0.89	Q			V
18+10	4.2247	0.88	Q			V
18+15	4.2307	0.88	Q			V
18+20	4.2367	0.87	Q			V
18+25	4.2427	0.87	Q			V
18+30	4.2487	0.87	Q			V
18+35	4.2544	0.82	Q			V
18+40	4.2593	0.71	Q			V
18+45	4.2640	0.68	Q			V
18+50	4.2682	0.62	Q			V
18+55	4.2717	0.50	Q			V
19+ 0	4.2749	0.47	Q			V
19+ 5	4.2784	0.50	Q			V
19+10	4.2826	0.60	Q			V
19+15	4.2869	0.63	Q			V
19+20	4.2917	0.69	Q			V
19+25	4.2972	0.81	Q			V
19+30	4.3030	0.84	Q			V
19+35	4.3085	0.80	Q			V
19+40	4.3134	0.70	Q			V
19+45	4.3180	0.68	Q			V
19+50	4.3223	0.62	Q			V
19+55	4.3258	0.50	Q			V
20+ 0	4.3290	0.47	Q			V
20+ 5	4.3325	0.50	Q			V
20+10	4.3366	0.60	Q			V
20+15	4.3409	0.63	Q			V
20+20	4.3453	0.64	Q			V
20+25	4.3498	0.65	Q			V
20+30	4.3543	0.65	Q			V
20+35	4.3588	0.65	Q			V
20+40	4.3633	0.65	Q			V
20+45	4.3678	0.65	Q			V
20+50	4.3719	0.60	Q			V
20+55	4.3753	0.49	Q			V
21+ 0	4.3785	0.46	Q			V
21+ 5	4.3820	0.50	Q			V
21+10	4.3862	0.60	Q			V
21+15	4.3905	0.63	Q			V
21+20	4.3945	0.59	Q			V
21+25	4.3979	0.49	Q			V
21+30	4.4010	0.46	Q			V
21+35	4.4045	0.50	Q			V
21+40	4.4087	0.60	Q			V
21+45	4.4130	0.63	Q			V
21+50	4.4170	0.59	Q			V
21+55	4.4204	0.49	Q			V
22+ 0	4.4236	0.46	Q			V
22+ 5	4.4270	0.50	Q			V
22+10	4.4312	0.60	Q			V
22+15	4.4355	0.63	Q			V
22+20	4.4396	0.59	Q			V
22+25	4.4429	0.49	Q			V
22+30	4.4461	0.46	Q			V
22+35	4.4492	0.45	Q			V
22+40	4.4523	0.44	Q			V
22+45	4.4553	0.44	Q			V
22+50	4.4583	0.44	Q			V

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   22+55       4.4613      0.44  |Q        |         |         |        V|
   23+ 0       4.4643      0.44  |Q        |         |         |        V|
   23+ 5       4.4673      0.44  |Q        |         |         |        V|
   23+10       4.4703      0.44  |Q        |         |         |        V|
   23+15       4.4733      0.44  |Q        |         |         |        V|
   23+20       4.4763      0.44  |Q        |         |         |        V|
   23+25       4.4793      0.44  |Q        |         |         |        V|
   23+30       4.4823      0.44  |Q        |         |         |        V|
   23+35       4.4853      0.44  |Q        |         |         |        V|
   23+40       4.4883      0.44  |Q        |         |         |        V|
   23+45       4.4913      0.44  |Q        |         |         |        V|
   23+50       4.4943      0.44  |Q        |         |         |        V|
   23+55       4.4973      0.44  |Q        |         |         |        V|
   24+ 0       4.5003      0.44  |Q        |         |         |        V|
   24+ 5       4.5026      0.33  |Q        |         |         |        V|
   24+10       4.5034      0.12  Q         |         |         |        V|
   24+15       4.5038      0.06  Q         |         |         |        V|
   24+20       4.5040      0.03  Q         |         |         |        V|
   24+25       4.5041      0.02  Q         |         |         |        V|
   24+30       4.5042      0.01  Q         |         |         |         V
-------------------------------------------------------------------------
```

HYDROLOGY MAPS



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- SUB-AREA BOUNDARY
- FLOW DIRECTION
- 101 / 14xx — NODE DESIGNATION, NODE ELEVATION
- *14XX — *INVERT ELEVATION
- 5.0 / 1000' — WATERSHED AREA (ACRES), LONGEST WATER PATH (FT)

NOTES:

1. LINE A-1 WILL BE CONSTRUCTED PER SEPARATE PROJECT WHICH WILL PROTECT THE SITE FROM PROJECT RUNOFF.
2. LINE A-2I IS PROPOSED TO GO DOWN TRUMBLE RD AND CONNECT INTO ROMOLAND MDP LINE-A.
3. THE PROJECT ONSITE STORM DRAIN SYSTEM OUTLETS DIRECTLY INTO ROMOLAND MDP LINE-A.

N W E S

1" = 80'

80 0 80 160 240

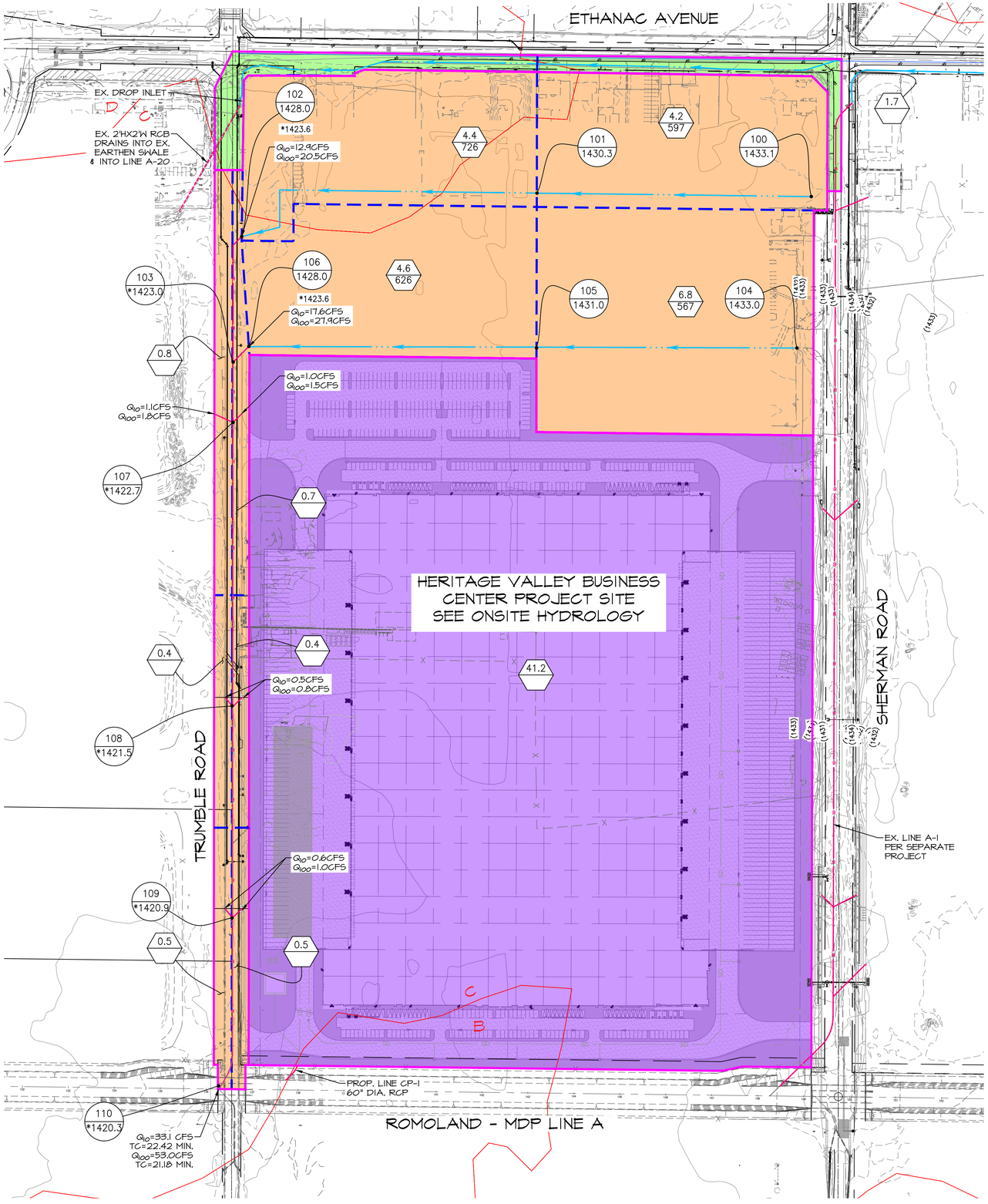
PRELIMINARY

CITY OF MENIFEE

RATIONAL METHOD DEVELOPED CONDITION HERITAGE VALLEY BUSINESS CENTER

SCALE: 1"=80'	ALBERT A. WEBB ASSOCIATES
DATE: 9/26/24	ENGINEERING CONSULTANTS
DESIGNED: MJS	3788 McCRAY STREET
CHECKED: JSL	RIVERSIDE CA. 92506
PLN CK REF:	PH. (951) 686-1070
F.B.	FAX (951) 788-1256
W.O. 24-0564	
SHEET 1	
OF 1 SHEETS	
DWG. NO.	

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LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- SUB-AREA BOUNDARY
- FLOW DIRECTION
- 101 / 14xx — NODE DESIGNATION, NODE ELEVATION
- *14XX — *INVERT ELEVATION
- 5.0 / 1000' — WATERSHED AREA (ACRES), WATER PATH (FT)
- C/D — SOIL TYPE
- LINE A-21 TRIBUTARY AREA
- LINE A-20 TRIBUTARY AREA
- LINE CP-1 TRIBUTARY AREA

N W E S

1" = 120'

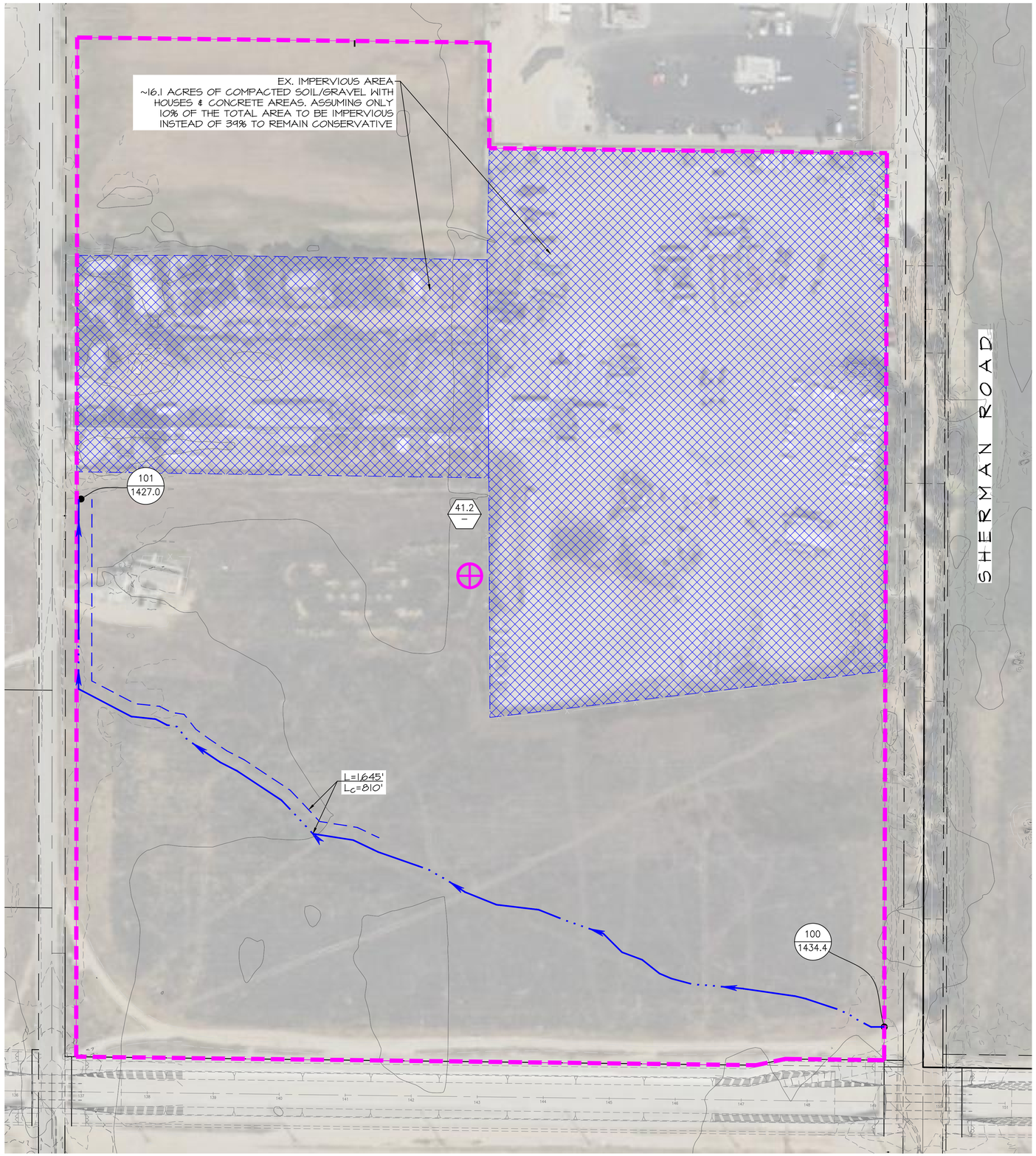
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CITY OF MENIFEE

RATIONAL METHOD HYDROLOGY
DEVELOPED CONDITION
OFFSITE LINE A-21
HERITAGE VALLEY BUSINESS CENTER

SCALE: AS SHOWN	ALBERT A. WEBB ASSOCIATES	W.O. 22-0186
DATE: 9/25/24	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET |
DESIGNED: MJS		OF 2 SHEETS
CHECKED: TMG		
PLN CK REF:		DWG. NO.
F.B.		

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LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / Lc=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION, NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 80'

80 0 80 160 240

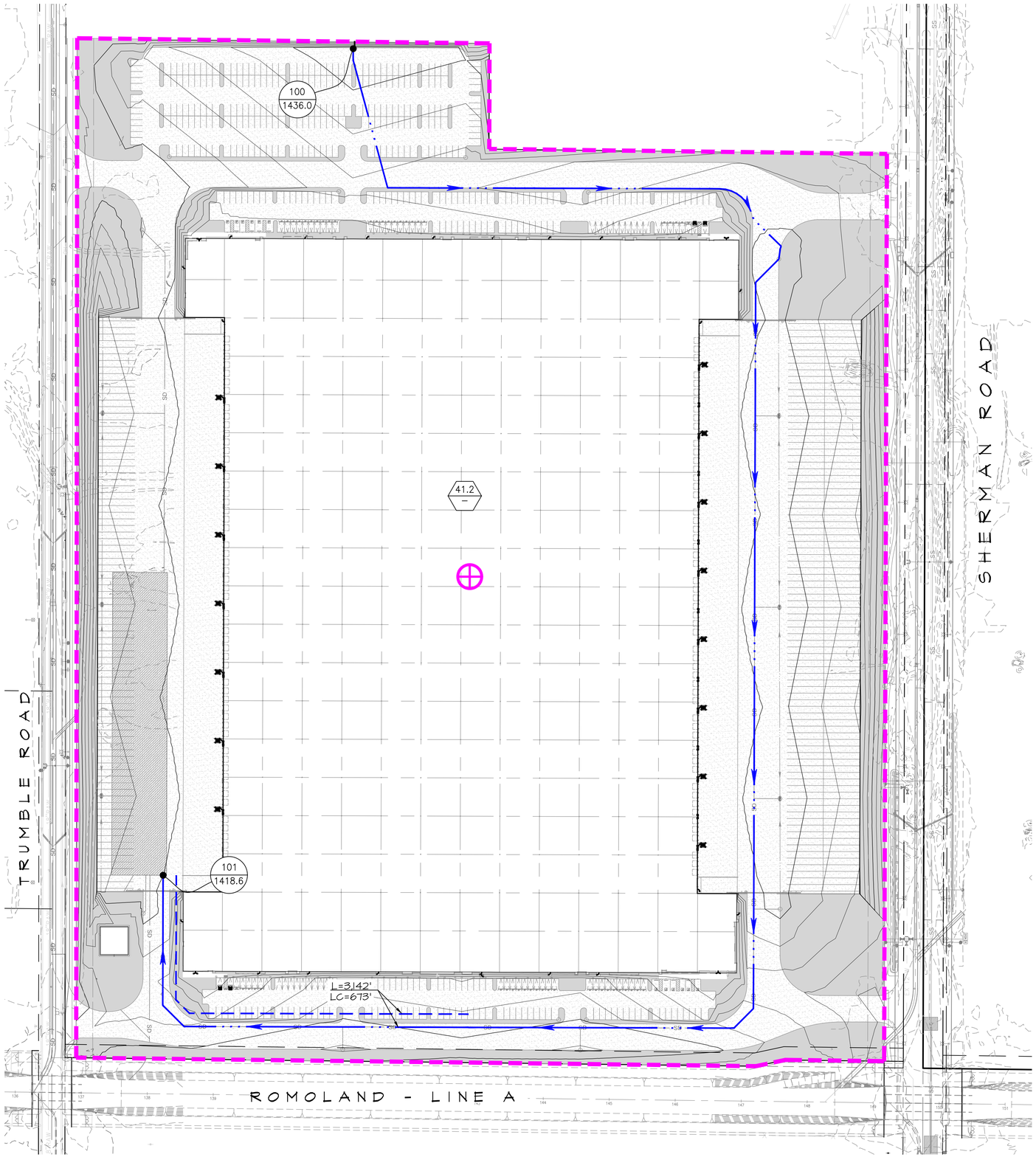
PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH
EXISTING CONDITION
HERITAGE VALLEY BUSINESS CENTER

SCALE: 1"=80'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 24-0564
DATE: 9/24/24			SHEET 1
DESIGNED: MJS			OF 2 SHEETS
CHECKED: JSL			
PLN CK REF:			DWG. NO.
F.B.			

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LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / LC=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N
W E
S

1" = 80'

80 0 80 160 240

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH DEVELOPED CONDITION HERITAGE VALLEY BUSINESS CENTER

SCALE: 1"=80'	W.O. 24-0564
DATE: 9/24/24	SHEET 2
DESIGNED: MJS	OF 2 SHEETS
CHECKED: JSL	DWG. NO.
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

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APPENDIX B – HYDRAULICS

WATER QUALITY & HCOC PUMP FLOWRATE CALCULATIONS

Pump Rate Calculation

DMA-A (Water Quality + HCOC)

$$\frac{V_{BMP}}{t_{drain}} = Area * i = \ Q_{pump}$$

$$\frac{V_{BMP}}{t_{drain}} = Q_{pump}$$

$$Q_{pump} = \frac{ft^3}{hr} * \frac{1\ hr}{3600\ sec} * \frac{449\ gpm}{1\ \frac{ft^3}{sec}}$$

$$Q_{pump} = \frac{(77{,}600\ ft^3) + (164{,}483\ ft^3)}{72\ hr} * \frac{449}{3600}\ \frac{gpm}{\frac{ft^3}{hr}} = 419\ gpm$$

$$\boldsymbol{Q_{pump} = 419\ gpm = 0.9\ cfs}$$

The existing 2-year, 24-hour storm event flow rate is 1.3 cfs. For this project, a pump rate of 1.0 cfs was chosen to better align with the existing flow rate of 1.3 cfs.

$$\frac{V_{BMP}}{Q_{pump}} = t_{drain}$$

$$\boldsymbol{t_{drain} = \frac{(77{,}600\ ft^3) + (164{,}483 ft^3\ )}{1.0\ cfs} * \frac{1\ hr}{3600\ sec} = 67.2\ hrs}$$

STORMTECH MC 4500 CHAMBER STATE-STORAGE TABLE

Project: **Heritage Valley Business Center**

Chamber Model -	MC-4500	
Units -	Imperial	
Number of Chambers -	993	
Number of End Caps -	18	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	1417.89	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in

Area of system - 37784 sf Min. Area - 36915 sf min. area

StormTech MC-4500 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	1259.47	1259.47	165901.09	1424.64
80	0.00	0.00	0.00	0.00	1259.47	1259.47	164641.61	1424.56
79	0.00	0.00	0.00	0.00	1259.47	1259.47	163382.14	1424.47
78	0.00	0.00	0.00	0.00	1259.47	1259.47	162122.66	1424.39
77	0.00	0.00	0.00	0.00	1259.47	1259.47	160863.19	1424.31
76	0.00	0.00	0.00	0.00	1259.47	1259.47	159603.72	1424.22
75	0.00	0.00	0.00	0.00	1259.47	1259.47	158344.24	1424.14
74	0.00	0.00	0.00	0.00	1259.47	1259.47	157084.77	1424.06
73	0.00	0.00	0.00	0.00	1259.47	1259.47	155825.30	1423.97
72	0.00	0.00	0.00	0.00	1259.47	1259.47	154565.82	1423.89
71	0.00	0.00	0.00	0.00	1259.47	1259.47	153306.35	1423.81
70	0.00	0.00	0.00	0.00	1259.47	1259.47	152046.88	1423.72
69	0.04	0.01	40.68	0.23	1243.11	1284.02	150787.40	1423.64
68	0.12	0.03	115.28	0.61	1213.12	1329.01	149503.38	1423.56
67	0.16	0.05	163.58	0.93	1193.67	1358.18	148174.37	1423.47
66	0.21	0.07	207.26	1.19	1176.09	1384.54	146816.19	1423.39
65	0.27	0.08	266.47	1.50	1152.29	1420.25	145431.65	1423.31
64	0.45	0.11	449.62	1.90	1078.87	1530.38	144011.39	1423.22
63	0.67	0.13	660.60	2.38	994.28	1657.27	142481.01	1423.14
62	0.80	0.16	793.42	2.90	940.95	1737.27	140823.74	1423.06
61	0.91	0.19	901.77	3.40	897.41	1802.57	139086.48	1422.97
60	1.00	0.22	995.88	3.93	859.55	1859.36	137283.91	1422.89
59	1.09	0.25	1079.72	4.44	825.81	1909.97	135424.54	1422.81
58	1.16	0.28	1155.34	4.96	795.36	1955.65	133514.57	1422.72
57	1.23	0.30	1225.37	5.43	767.15	1997.96	131558.92	1422.64
56	1.30	0.33	1290.58	5.90	740.88	2037.36	129560.96	1422.56
55	1.36	0.35	1351.50	6.38	716.32	2074.20	127523.60	1422.47
54	1.42	0.38	1408.78	6.91	693.20	2108.89	125449.40	1422.39
53	1.47	0.41	1463.01	7.37	671.32	2141.70	123340.51	1422.31
52	1.53	0.44	1514.48	7.94	650.51	2172.92	121198.81	1422.22
51	1.57	0.47	1563.47	8.44	630.71	2202.62	119025.89	1422.14
50	1.62	0.50	1610.04	8.91	611.89	2230.85	116823.27	1422.06
49	1.67	0.52	1654.56	9.37	593.90	2257.84	114592.43	1421.97
48	1.71	0.54	1697.15	9.80	576.70	2283.64	112334.59	1421.89
47	1.75	0.57	1737.84	10.20	560.26	2308.30	110050.95	1421.81
46	1.79	0.59	1776.77	10.59	544.53	2331.89	107742.65	1421.72
45	1.83	0.61	1814.40	10.98	529.32	2354.70	105410.76	1421.64
44	1.86	0.63	1850.40	11.38	514.76	2376.54	103056.05	1421.56
43	1.90	0.64	1885.04	11.58	500.83	2397.44	100679.52	1421.47
42	1.93	0.68	1918.31	12.19	487.27	2417.78	98282.08	1421.39
41	1.96	0.70	1950.33	12.60	474.30	2437.23	95864.30	1421.31
40	2.00	0.72	1981.15	13.00	461.81	2455.97	93427.07	1421.22
39	2.03	0.74	2010.83	13.39	449.79	2474.01	90971.10	1421.14
38	2.05	0.76	2039.41	13.76	438.21	2491.38	88497.10	1421.06
37	2.08	0.79	2066.93	14.14	427.05	2508.11	86005.72	1420.97
36	2.11	0.80	2093.32	14.45	416.37	2524.14	83497.60	1420.89
35	2.13	0.82	2118.91	14.76	406.01	2539.68	80973.47	1420.81
34	2.16	0.84	2143.57	15.09	396.01	2554.67	78433.79	1420.72
33	2.18	0.85	2167.26	15.32	386.44	2569.03	75879.13	1420.64
32	2.21	0.86	2190.09	15.47	377.25	2582.81	73310.10	1420.56
31	2.23	0.89	2212.06	16.01	368.25	2596.31	70727.29	1420.47
30	2.25	0.90	2233.13	16.28	359.71	2609.12	68130.98	1420.39
29	2.27	0.92	2253.46	16.51	351.48	2621.46	65521.86	1420.31
28	2.29	0.92	2272.96	16.56	343.67	2633.19	62900.40	1420.22
27	2.31	0.94	2291.70	16.98	336.00	2644.68	60267.22	1420.14
26	2.33	0.96	2309.67	17.21	328.72	2655.60	57622.54	1420.06
25	2.34	0.97	2326.89	17.44	321.74	2666.07	54966.94	1419.97
24	2.36	0.98	2343.39	17.66	315.05	2676.11	52300.87	1419.89
23	2.38	0.97	2359.17	17.48	308.82	2685.46	49624.76	1419.81
22	2.39	1.00	2374.24	18.06	302.55	2694.85	46939.30	1419.72
21	2.41	1.01	2388.62	18.20	296.74	2703.57	44244.44	1419.64
20	2.42	1.02	2402.32	18.37	291.20	2711.89	41540.88	1419.56
19	2.43	1.03	2415.36	18.55	285.91	2719.81	38828.99	1419.47
18	2.44	1.04	2427.72	18.70	280.91	2727.33	36109.17	1419.39
17	2.46	1.05	2439.44	18.83	276.16	2734.44	33381.85	1419.31
16	2.47	1.05	2450.51	18.97	271.68	2741.16	30647.41	1419.22

LINE CP-1

```
T1 CORE 5 - MENIFEE COMMERCE CENTER                                          0
T2 ONSITE STORM DRAIN LINE CP-1
T3 FN: LINECP1.WSW
SO   1000.0001421.670  2                         1421.670
REM   THE INITIAL WATER SURFACE ELEVATION IS A NORMAL DEPTH CALCULATION SINCE IT IS FREE-FLOWING
REM   AND PROTECTED FROM A BACKWATER CONDITION WITH A PRIVATELY MAINTAINED FLAPGATE
R    1017.8901421.720  2      .013                                  .000    .000 0
R    1066.6601421.870  2      .013                               -46.572    .000 0
R    1071.6601421.890  2      .013                                  .000    .000 0
REM  JUNCTION WHERE WATER QUALITY PUMP DISCHARGES OUT AT 1.0 CFS INTO LINE CP-1.
REM  THIS WATER QUALITY FLOW IS CONSIDERED NEGLIGIBLE SINCE THE STORM DRAIN IS
REM  BEING DESIGNED TO CONVEY THE FULL 100YR PEAK FLOWRATE
R    1319.6001422.640  2      .013                                  .000   0.000 0
WE   1319.6001422.640  3      .500
R    1322.6001422.840  3      .013                                  .000    .000 0
SH   1322.6001422.840  3                         1422.840
CD   1  3   0    .000   4.000    5.000  .000  .000   .00
CD   2  4   1    .000   5.000     .000  .000  .000   .00
CD   3  3   0    .000   5.000    5.000  .000  .000   .00
Q            91.800   .0
```

WATER SURFACE PROFILE - CHANNEL DEFINITION LISTING

CARD CODE	SECT NO	CHN TYPE	NO OF PIER/PIP	AVE PIER WIDTH	HEIGHT 1 DIAMETER	BASE WIDTH	ZL	ZR	INV DROP	Y(1)	Y(2)	Y(3)	Y(4)	Y(5)	Y(6)	Y(7)	Y(8)	Y(9)	Y(10)
CD	1	3	0	.000	4.000	5.000	.000	.000	.00										
CD	2	4	1		5.000														
CD	3	3	0	.000	5.000	5.000	.000	.000	.00										

WATER SURFACE PROFILE - TITLE CARD LISTING

HEADING LINE NO 1 IS -
CORE 5 - MENIFEE COMMERCE CENTER 0

HEADING LINE NO 2 IS -
ONSITE STORM DRAIN LINE CP-1

HEADING LINE NO 3 IS -
FN: LINECP1.WSW

WATER SURFACE PROFILE - ELEMENT CARD LISTING

ELEMENT NO 1 IS A SYSTEM OUTLET * * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1000.000	1421.670	2	1421.670

REMARKS: THE INITIAL WATER SURFACE ELEVATION IS A NORMAL DEPTH CALCULATION SINCE IT IS FREE-FLOWING
REMARKS: AND PROTECTED FROM A BACKWATER CONDITION WITH A PRIVATELY MAINTAINED FLAPGATE

ELEMENT NO 2 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1017.890	1421.720	2	.013	.000	.000	.000	0

ELEMENT NO 3 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1066.660	1421.870	2	.013	60.000	-46.572	.000	0

ELEMENT NO 4 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1071.660	1421.890	2	.013	.000	.000	.000	0

REMARKS: JUNCTION WHERE WATER QUALITY PUMP DISCHARGES OUT AT 1.0 CFS INTO LINE CP-1.
REMARKS: THIS WATER QUALITY FLOW IS CONSIDERED NEGLIGIBLE SINCE THE STORM DRAIN IS
REMARKS: BEING DESIGNED TO CONVEY THE FULL 100YR PEAK FLOWRATE

ELEMENT NO 5 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1319.600	1422.640	2	.013	.000	.000	.000	0

ELEMENT NO 6 IS A WALL ENTRANCE *

U/S DATA	STATION	INVERT	SECT	FP
	1319.600	1422.640	3	.500

ELEMENT NO 7 IS A REACH * * *

U/S DATA	STATION	INVERT	SECT	N	RADIUS	ANGLE	ANG PT	MAN H
	1322.600	1422.840	3	.013	.000	.000	.000	0

ELEMENT NO 8 IS A SYSTEM HEADWORKS * *

U/S DATA	STATION	INVERT	SECT	W S ELEV
	1322.600	1422.840	3	1422.840

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 9-26-2024 Time:11:51:34

CORE 5 - MENIFEE COMMERCE CENTER 0

ONSITE STORM DRAIN LINE CP-1

FN: LINECP1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1000.000	1421.670	2.721	1424.391	91.80	8.40	1.10	1425.49	.00	2.72	4.98	5.000	.000	.00	1 .0
9.724	.0028					.0035	.03	2.72	1.00	2.99	.013	.00	.00	PIPE
1009.724	1421.697	2.828	1424.525	91.80	8.01	1.00	1425.52	.00	2.72	4.96	5.000	.000	.00	1 .0
8.166	.0028					.0033	.03	2.83	.93	2.99	.013	.00	.00	PIPE
1017.890	1421.720	2.854	1424.574	91.80	7.93	.98	1425.55	.08	2.72	4.95	5.000	.000	.00	1 .0
48.770	.0031					.0032	.15	2.93	.91	2.89	.013	.00	.00	PIPE
1066.660	1421.870	2.880	1424.750	91.80	7.84	.95	1425.70	.00	2.72	4.94	5.000	.000	.00	1 .0
5.000	.0040					.0032	.02	2.88	.90	2.67	.013	.00	.00	PIPE
1071.660	1421.890	2.857	1424.747	91.80	7.92	.97	1425.72	.00	2.72	4.95	5.000	.000	.00	1 .0
122.858	.0030					.0031	.38	2.86	.91	2.91	.013	.00	.00	PIPE
1194.518	1422.262	2.910	1425.172	91.80	7.74	.93	1426.10	.00	2.72	4.93	5.000	.000	.00	1 .0
125.082	.0030					.0030	.38	2.91	.88	2.91	.013	.00	.00	PIPE
1319.600	1422.640	2.910	1425.550	91.80	7.74	.93	1426.48	.00	2.72	4.93	5.000	.000	.00	1 .0
WALL	ENTRANCE													
1319.600	1422.640	3.643	1426.283	91.80	5.04	.39	1426.68	.00	2.19	5.00	5.000	5.000	.00	0 .0
1.988	.0667					.0011	.00	3.64	.47	.85	.013	.00	.00	BOX
1321.588	1422.773	3.473	1426.246	91.80	5.29	.43	1426.68	.00	2.19	5.00	5.000	5.000	.00	0 .0
1.012	.0667					.0013	.00	3.47	.50	.85	.013	.00	.00	BOX

Program Package Serial Number: 1585

WATER SURFACE PROFILE LISTING Date: 9-26-2024 Time:11:51:34

CORE 5 - MENIFEE COMMERCE CENTER 0

ONSITE STORM DRAIN LINE CP-1

FN: LINECP1.WSW

Station	Invert Elev	Depth (FT)	Water Elev	Q (CFS)	Vel (FPS)	Vel Head	Energy Grd.El.	Super Elev	Critical Depth	Flow Top Width	Height/ Dia.-FT	Base Wt or I.D.	ZL	No Wth Prs/Pip
L/Elem	Ch Slope					SF Ave	HF	SE Dpth	Froude N	Norm Dp	"N"	X-Fall	ZR	Type Ch
1322.600	1422.840	3.384	1426.224	91.80	5.43	.46	1426.68	.00	2.19	5.00	5.000	5.000	.00	0 .0

100-YEAR WSE

STAGE-STORAGE-OUTFLOW TABLE

ALBERT A. WEBB ASSOCIATES

Basin Stage-Storage-Outflow Table
24-0564 Core5 - Heritage Valley Business Center
Underground Chambers

Chamber Information:	ADS MC-4500		**Pump Flowrate**		**100-year Outlet**	
Vbmp:	77,600	CF	Ex. 2-YR 24-HR	1.3	5-ft Diameter Pipe	
	1.781	AC-FT	Q (CFS)	1.0		
Bottom Elevation:	1417.89	FT				
Bottom Length:	455	FT				
Bottom Width:	83	FT				
Bottom Area:	37,784	SF				
Bottom Slope:	0	%				
					Invert H (FT)	1422.64

#	Elevation (FT)	Depth (FT)	Storage (AC-FT)	Q (CFS)	h** (FT)	Q** (CFS)	Qtotal (CFS)	Comments
1.00	1,417.89	0.00	0.000	0.000	0.00	0.00	0.000	Bottom of gravel
2.00	1,417.97	0.08	0.029	0.500	0.00	0.00	0.500	
3.00	1,418.39	0.50	0.173	1.000	0.00	0.00	1.000	
4.00	1,418.64	0.75	0.260	1.000	0.00	0.00	1.000	Top of gravel, Bottom of chambers
5.00	1,418.89	1.00	0.451	1.000	0.00	0.00	1.000	
6.00	1,419.89	2.00	1.201	1.000	0.00	0.00	1.000	
7.00	1,420.72	2.83	1.801	1.000	0.00	0.00	1.000	Water quality volume
8.00	1,420.89	3.00	1.917	1.000	0.00	0.00	1.000	
9.00	1,421.64	3.75	2.420	1.000	0.00	0.00	1.000	
10.00	1,422.72	4.83	3.065	1.000	0.08	0.50	1.500	
11.00	1,423.06	5.17	3.233	1.000	0.42	1.00	2.000	
12.00	1,423.47	5.58	3.402	1.000	0.83	5.00	6.000	
13.00	1,424.06	6.17	3.606	1.000	1.42	15.00	16.000	
14.00	1,424.31	6.42	3.693	1.000	1.67	20.00	21.000	
15.00	1,424.64	6.75	3.809	1.000	2.00	29.00	30.000	Top of total underground system
16.00	1,425.14	7.25	3.810	1.000	2.50	40.00	41.000	
17.00	1,425.50	7.61	3.811	1.000	2.86	60.00	61.000	
18.00	1,425.64	7.75	3.812	1.000	3.00	65.00	66.000	
19.00	1,425.99	8.10	3.813	1.000	3.35	80.00	81.000	
20.00	1,426.40	8.51	3.814	1.000	3.76	100.00	101.000	

** The head is a result from the outlet pipe hydraulics pertaining to the assumed flows

BASIN ROUTING
2-YEAR, 24-HOUR STORM EVENT

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 09/24/24

24-0564 - HERITAGE VALLEY BUSINESS CENTER
BASIN ROUTING CALCULATIONS
2-YEAR, 24-HOUR STORM EVENT
FN: ROUTE242.OUT MJS

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: ONSITEPROP242.rte
**************************HYDROGRAPH DATA**************************
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.394 (CFS)
Total volume = 4.504 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
****

++
Process from Point/Station 100.000 to Point/Station 101.000
**** RETARDING BASIN ROUTING ****
_____

User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.080	0.029	0.500	0.027	0.031
0.500	0.173	1.000	0.170	0.176
0.750	0.260	1.000	0.257	0.263
1.000	0.451	1.000	0.448	0.454
2.000	1.201	1.000	1.198	1.204
2.830	1.801	1.000	1.798	1.804
3.000	1.917	1.000	1.914	1.920
3.750	2.420	1.000	2.417	2.423
4.830	3.065	1.500	3.060	3.070
5.170	3.233	2.000	3.226	3.240
5.580	3.402	6.000	3.381	3.423
6.170	3.606	16.000	3.551	3.661

6.420	3.693	21.000	3.621	3.765
6.750	3.809	30.000	3.706	3.912
7.250	3.910	41.000	3.769	4.051
7.610	3.811	61.000	3.601	4.021
7.750	3.812	66.000	3.585	4.039
8.100	3.813	81.000	3.534	4.092
8.510	3.814	101.000	3.466	4.162

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.8 3.70 5.55 7.39	Depth (Ft.)
0.083	0.11	0.01	0.000	O	0.00
0.167	0.32	0.03	0.002	OI	0.00
0.250	0.38	0.06	0.004	OI	0.01
0.333	0.46	0.10	0.006	OI	0.02
0.417	0.58	0.15	0.009	O I	0.02
0.500	0.62	0.20	0.012	O I	0.03
0.583	0.64	0.25	0.014	|OI	0.04
0.667	0.65	0.29	0.017	|OI	0.05
0.750	0.65	0.33	0.019	|OI	0.05
0.833	0.71	0.37	0.022	|O I	0.06
0.917	0.81	0.42	0.024	|O I	0.07
1.000	0.84	0.46	0.027	|O I	0.07
1.083	0.80	0.50	0.029	| OI	0.08
1.167	0.70	0.51	0.031	| OI	0.09
1.250	0.68	0.51	0.032	| O	0.09
1.333	0.67	0.51	0.033	| O	0.09
1.417	0.66	0.52	0.034	| O	0.10
1.500	0.66	0.52	0.035	| O	0.10
1.583	0.65	0.52	0.036	| O	0.10
1.667	0.65	0.53	0.037	| O	0.10
1.750	0.65	0.53	0.038	| O	0.11
1.833	0.71	0.53	0.039	| OI	0.11
1.917	0.81	0.54	0.040	| OI	0.11
2.000	0.84	0.55	0.042	| OI	0.12
2.083	0.86	0.55	0.044	| OI	0.13
2.167	0.86	0.56	0.047	| OI	0.13
2.250	0.87	0.57	0.049	| OI	0.14
2.333	0.87	0.58	0.051	| OI	0.14
2.417	0.87	0.58	0.053	| OI	0.15
2.500	0.87	0.59	0.055	| OI	0.15
2.583	0.93	0.60	0.057	| O I	0.16
2.667	1.03	0.61	0.059	| O I	0.17
2.750	1.06	0.62	0.062	| O I	0.18
2.833	1.07	0.63	0.065	| O I	0.19
2.917	1.08	0.64	0.069	| O I	0.20
3.000	1.09	0.65	0.072	| O I	0.20
3.083	1.09	0.66	0.075	| O I	0.21
3.167	1.09	0.67	0.078	| O I	0.22
3.250	1.09	0.68	0.080	| O I	0.23
3.333	1.09	0.69	0.083	| O I	0.24
3.417	1.09	0.70	0.086	| OI	0.25
3.500	1.09	0.71	0.089	| OI	0.25
3.583	1.09	0.72	0.091	| OI	0.26
3.667	1.09	0.72	0.094	| OI	0.27
3.750	1.09	0.73	0.096	| OI	0.28
3.833	1.14	0.74	0.099	| OI	0.28
3.917	1.25	0.75	0.102	| O I	0.29
4.000	1.28	0.77	0.105	| O I	0.30
4.083	1.29	0.78	0.109	| O I	0.31
4.167	1.30	0.79	0.112	| O I	0.32
4.250	1.30	0.80	0.116	| O I	0.33
4.333	1.36	0.81	0.120	| O I	0.34
4.417	1.47	0.83	0.124	| O I	0.36
4.500	1.50	0.84	0.128	| O I	0.37

4.583	1.51	0.86	0.133	O I				0.38
4.667	1.52	0.88	0.137	O I				0.40
4.750	1.52	0.89	0.141	O I				0.41
4.833	1.58	0.91	0.146	O I				0.42
4.917	1.69	0.92	0.151	O I				0.44
5.000	1.72	0.94	0.156	O I				0.45
5.083	1.62	0.96	0.161	O I				0.47
5.167	1.42	0.97	0.165	O I				0.48
5.250	1.36	0.98	0.168	OI				0.48
5.333	1.39	0.99	0.170	O I				0.49
5.417	1.48	1.00	0.174	O I				0.50
5.500	1.50	1.00	0.177	O I				0.51
5.583	1.56	1.00	0.181	O I				0.52
5.667	1.68	1.00	0.185	O I				0.53
5.750	1.71	1.00	0.190	O I				0.55
5.833	1.73	1.00	0.195	O I				0.56
5.917	1.74	1.00	0.200	O I				0.58
6.000	1.74	1.00	0.205	O I				0.59
6.083	1.80	1.00	0.210	O I				0.61
6.167	1.90	1.00	0.216	O I				0.62
6.250	1.93	1.00	0.222	O I				0.64
6.333	1.95	1.00	0.229	O I				0.66
6.417	1.95	1.00	0.235	O I				0.68
6.500	1.96	1.00	0.242	O I				0.70
6.583	2.02	1.00	0.249	O I				0.72
6.667	2.12	1.00	0.256	O I				0.74
6.750	2.15	1.00	0.264	O I				0.75
6.833	2.16	1.00	0.272	O I				0.77
6.917	2.17	1.00	0.280	O I				0.78
7.000	2.18	1.00	0.288	O I				0.79
7.083	2.18	1.00	0.296	O I				0.80
7.167	2.18	1.00	0.304	O I				0.81
7.250	2.18	1.00	0.312	O I				0.82
7.333	2.23	1.00	0.321	O I				0.83
7.417	2.34	1.00	0.329	O I				0.84
7.500	2.37	1.00	0.339	O I				0.85
7.583	2.44	1.00	0.348	O I				0.87
7.667	2.55	1.00	0.359	O I				0.88
7.750	2.58	1.00	0.369	O I				0.89
7.833	2.65	1.00	0.381	O I				0.91
7.917	2.77	1.00	0.392	O I				0.92
8.000	2.80	1.00	0.405	O I				0.94
8.083	2.92	1.00	0.418	O I				0.96
8.167	3.15	1.00	0.432	O I				0.97
8.250	3.21	1.00	0.447	O I				0.99
8.333	3.24	1.00	0.462	O I				1.01
8.417	3.25	1.00	0.477	O I				1.04
8.500	3.26	1.00	0.493	O I				1.06
8.583	3.32	1.00	0.509	O I				1.08
8.667	3.43	1.00	0.525	O I				1.10
8.750	3.46	1.00	0.542	O I				1.12
8.833	3.53	1.00	0.559	O I				1.14
8.917	3.64	1.00	0.577	O I				1.17
9.000	3.67	1.00	0.595	O I				1.19
9.083	3.80	1.00	0.614	O I				1.22
9.167	4.02	1.00	0.634	O I				1.24
9.250	4.08	1.00	0.655	O I				1.27
9.333	4.16	1.00	0.676	O I				1.30
9.417	4.29	1.00	0.699	O I				1.33
9.500	4.32	1.00	0.721	O I				1.36
9.583	4.40	1.00	0.745	O I				1.39
9.667	4.51	1.00	0.768	O I				1.42
9.750	4.55	1.00	0.793	O I				1.46
9.833	4.62	1.00	0.817	O I				1.49
9.917	4.73	1.00	0.843	O I				1.52
10.000	4.76	1.00	0.868	O I				1.56
10.083	4.41	1.00	0.893	O I				1.59
10.167	3.67	1.00	0.914	O I				1.62
10.250	3.47	1.00	0.932	O I				1.64

10.333	3.38	1.00	0.948		O		I		1.66
10.417	3.33	1.00	0.965		O		I		1.68
10.500	3.29	1.00	0.981		O		I		1.71
10.583	3.54	1.00	0.997		O		I		1.73
10.667	4.07	1.00	1.017		O		I		1.75
10.750	4.22	1.00	1.038		O		I		1.78
10.833	4.28	1.00	1.061		O		I		1.81
10.917	4.32	1.00	1.083		O		I		1.84
11.000	4.34	1.00	1.106		O		I		1.87
11.083	4.31	1.00	1.129		O		I		1.90
11.167	4.20	1.00	1.152		O		I		1.93
11.250	4.17	1.00	1.173		O		I		1.96
11.333	4.16	1.00	1.195		O		I		1.99
11.417	4.15	1.00	1.217		O		I		2.02
11.500	4.15	1.00	1.239		O		I		2.05
11.583	4.04	1.00	1.260		O		I		2.08
11.667	3.82	1.00	1.280		O		I		2.11
11.750	3.76	1.00	1.299		O		I		2.14
11.833	3.79	1.00	1.318		O		I		2.16
11.917	3.88	1.00	1.338		O		I		2.19
12.000	3.90	1.00	1.358		O		I		2.22
12.083	4.28	1.00	1.379		O		I		2.25
12.167	5.03	1.00	1.404		O		I		2.28
12.250	5.24	1.00	1.433		O		I		2.32
12.333	5.39	1.00	1.463		O		I		2.36
12.417	5.55	1.00	1.493		O		I		2.40
12.500	5.61	1.00	1.525		O		I		2.45
12.583	5.76	1.00	1.557		O		I		2.49
12.667	5.98	1.00	1.591		O		I		2.54
12.750	6.04	1.00	1.625		O		I		2.59
12.833	6.13	1.00	1.660		O		I		2.64
12.917	6.25	1.00	1.696		O		I		2.68
13.000	6.29	1.00	1.732		O		I		2.74
13.083	6.57	1.00	1.770		O		I		2.79
13.167	7.11	1.00	1.810		O		I		2.84
13.250	7.26	1.00	1.853		O		I		2.91
13.333	7.33	1.00	1.896		O		I		2.97
13.417	7.37	1.00	1.940		O		I		3.03
13.500	7.39	1.00	1.984		O		I		3.10
13.583	6.83	1.00	2.026		O		I		3.16
13.667	5.66	1.00	2.062		O		I		3.22
13.750	5.33	1.00	2.093		O		I		3.26
13.833	5.18	1.00	2.122		O		I		3.31
13.917	5.10	1.00	2.151		O		I		3.35
14.000	5.05	1.00	2.179		O		I		3.39
14.083	5.23	1.00	2.207		O		I		3.43
14.167	5.65	1.00	2.238		O		I		3.48
14.250	5.77	1.00	2.270		O		I		3.53
14.333	5.77	1.00	2.303		O		I		3.58
14.417	5.69	1.00	2.336		O		I		3.62
14.500	5.68	1.00	2.368		O		I		3.67
14.583	5.68	1.00	2.400		O		I		3.72
14.667	5.68	1.01	2.432		O		I		3.77
14.750	5.67	1.03	2.465		O		I		3.82
14.833	5.61	1.06	2.496		O		I		3.88
14.917	5.51	1.08	2.527		O		I		3.93
15.000	5.48	1.11	2.557		O		I		3.98
15.083	5.41	1.13	2.587		O		I		4.03
15.167	5.30	1.15	2.616		O		I		4.08
15.250	5.26	1.17	2.645		O		I		4.13
15.333	5.19	1.20	2.672		O		I		4.17
15.417	5.08	1.22	2.700		O		I		4.22
15.500	5.05	1.24	2.726		O		I		4.26
15.583	4.82	1.26	2.751		O		I		4.30
15.667	4.38	1.27	2.774		O		I		4.34
15.750	4.26	1.29	2.795		O		I		4.38
15.833	4.20	1.31	2.815		O		I		4.41
15.917	4.17	1.32	2.835		O		I		4.45
16.000	4.16	1.34	2.855		O		I		4.48

16.083	3.35	1.35	2.871	| O |	I |	|	|	4.51	
16.167	1.75	1.36	2.880	| O I|		|	|	4.52	
16.250	1.31	1.36	2.881	| O |		|	|	4.52	
16.333	1.10	1.36	2.880	| IO |		|	|	4.52	
16.417	0.99	1.35	2.878	| IO |		|	|	4.52	2YR-24HR WSE=1417.89+4.52=1422.41
16.500	0.93	1.35	2.875	| IO |		|	|	4.51	
16.583	0.82	1.35	2.872	| I O |		|	|	4.51	
16.667	0.71	1.35	2.868	| I O |		|	|	4.50	
16.750	0.68	1.34	2.863	| I O |		|	|	4.49	
16.833	0.67	1.34	2.859	| I O |		|	|	4.48	
16.917	0.66	1.34	2.854	| I O |		|	|	4.48	
17.000	0.66	1.33	2.849	| I O |		|	|	4.47	
17.083	0.76	1.33	2.845	| I O |		|	|	4.46	
17.167	0.97	1.33	2.842	| IO |		|	|	4.46	
17.250	1.03	1.33	2.840	| IO |		|	|	4.45	
17.333	1.06	1.32	2.838	| IO |		|	|	4.45	
17.417	1.07	1.32	2.836	| IO |		|	|	4.45	
17.500	1.08	1.32	2.834	| IO |		|	|	4.44	
17.583	1.09	1.32	2.833	| IO |		|	|	4.44	
17.667	1.09	1.32	2.831	| IO |		|	|	4.44	
17.750	1.09	1.32	2.829	| IO |		|	|	4.44	
17.833	1.04	1.32	2.828	| IO |		|	|	4.43	
17.917	0.93	1.31	2.825	| IO |		|	|	4.43	
18.000	0.90	1.31	2.823	| I O |		|	|	4.42	
18.083	0.89	1.31	2.820	| I O |		|	|	4.42	
18.167	0.88	1.31	2.817	| I O |		|	|	4.41	
18.250	0.88	1.31	2.814	| I O |		|	|	4.41	
18.333	0.87	1.30	2.811	| I O |		|	|	4.40	
18.417	0.87	1.30	2.808	| I O |		|	|	4.40	
18.500	0.87	1.30	2.805	| I O |		|	|	4.39	
18.583	0.82	1.30	2.802	| I O |		|	|	4.39	
18.667	0.71	1.29	2.798	| I O |		|	|	4.38	
18.750	0.68	1.29	2.794	| I O |		|	|	4.38	
18.833	0.62	1.29	2.790	| I O |		|	|	4.37	
18.917	0.50	1.28	2.785	| I O |		|	|	4.36	
19.000	0.47	1.28	2.779	| I O |		|	|	4.35	
19.083	0.50	1.27	2.774	| I O |		|	|	4.34	
19.167	0.60	1.27	2.769	| I O |		|	|	4.33	
19.250	0.63	1.27	2.764	| I O |		|	|	4.33	
19.333	0.69	1.26	2.760	| I O |		|	|	4.32	
19.417	0.81	1.26	2.757	| I O |		|	|	4.31	
19.500	0.84	1.26	2.754	| I O |		|	|	4.31	
19.583	0.80	1.26	2.751	| I O |		|	|	4.30	
19.667	0.70	1.25	2.747	| I O |		|	|	4.30	
19.750	0.68	1.25	2.743	| I O |		|	|	4.29	
19.833	0.62	1.25	2.739	| I O |		|	|	4.28	
19.917	0.50	1.24	2.735	| I O |		|	|	4.28	
20.000	0.47	1.24	2.729	| I O |		|	|	4.27	
20.083	0.50	1.24	2.724	| I O |		|	|	4.26	
20.167	0.60	1.23	2.719	| I O |		|	|	4.25	
20.250	0.63	1.23	2.715	| I O |		|	|	4.24	
20.333	0.64	1.23	2.711	| I O |		|	|	4.24	
20.417	0.65	1.22	2.707	| I O |		|	|	4.23	
20.500	0.65	1.22	2.703	| I O |		|	|	4.22	
20.583	0.65	1.22	2.699	| I O |		|	|	4.22	
20.667	0.65	1.21	2.695	| I O |		|	|	4.21	
20.750	0.65	1.21	2.692	| I O |		|	|	4.20	
20.833	0.60	1.21	2.688	| I O |		|	|	4.20	
20.917	0.49	1.20	2.683	| I O |		|	|	4.19	
21.000	0.46	1.20	2.678	| I O |		|	|	4.18	
21.083	0.50	1.20	2.673	| I O |		|	|	4.17	
21.167	0.60	1.19	2.669	| I O |		|	|	4.17	
21.250	0.63	1.19	2.665	| I O |		|	|	4.16	
21.333	0.59	1.19	2.661	| I O |		|	|	4.15	
21.417	0.49	1.18	2.656	| I O |		|	|	4.15	
21.500	0.46	1.18	2.651	|I O |		|	|	4.14	
21.583	0.50	1.18	2.647	| I O |		|	|	4.13	
21.667	0.60	1.17	2.642	| I O |		|	|	4.12	
21.750	0.63	1.17	2.639	| I O |		|	|	4.12	

21.833	0.59	1.17	2.635	| I O |	|	|	|	4.11
21.917	0.49	1.16	2.630	| I O |	|	|	|	4.10
22.000	0.46	1.16	2.626	|I O |	|	|	|	4.09
22.083	0.50	1.16	2.621	| I O |	|	|	|	4.09
22.167	0.60	1.15	2.617	| I O |	|	|	|	4.08
22.250	0.63	1.15	2.613	| I O |	|	|	|	4.07
22.333	0.59	1.15	2.609	| I O |	|	|	|	4.07
22.417	0.49	1.14	2.605	| I O |	|	|	|	4.06
22.500	0.46	1.14	2.601	|I O |	|	|	|	4.05
22.583	0.45	1.14	2.596	|I O |	|	|	|	4.04
22.667	0.44	1.13	2.591	|I O |	|	|	|	4.04
22.750	0.44	1.13	2.587	|I O |	|	|	|	4.03
22.833	0.44	1.13	2.582	|I O |	|	|	|	4.02
22.917	0.44	1.12	2.577	|I O |	|	|	|	4.01
23.000	0.44	1.12	2.572	|I O |	|	|	|	4.01
23.083	0.44	1.11	2.568	|I O |	|	|	|	4.00
23.167	0.44	1.11	2.563	|I O |	|	|	|	3.99
23.250	0.44	1.11	2.558	|I O |	|	|	|	3.98
23.333	0.44	1.10	2.554	|I O |	|	|	|	3.97
23.417	0.44	1.10	2.549	|I O |	|	|	|	3.97
23.500	0.44	1.10	2.545	|I O |	|	|	|	3.96
23.583	0.44	1.09	2.540	|I O |	|	|	|	3.95
23.667	0.44	1.09	2.536	|I O |	|	|	|	3.94
23.750	0.44	1.09	2.531	|I O |	|	|	|	3.94
23.833	0.44	1.08	2.527	|I O |	|	|	|	3.93
23.917	0.44	1.08	2.522	|I O |	|	|	|	3.92
24.000	0.44	1.08	2.518	|I O |	|	|	|	3.91
24.083	0.33	1.07	2.513	|I O |	|	|	|	3.91
24.167	0.12	1.07	2.507	I O |	|	|	|	3.90
24.250	0.06	1.06	2.500	I O |	|	|	|	3.88
24.333	0.03	1.06	2.493	I O |	|	|	|	3.87
24.417	0.02	1.05	2.486	I O |	|	|	|	3.86
24.500	0.01	1.05	2.479	I O |	|	|	|	3.85
24.583	0.00	1.04	2.472	I O |	|	|	|	3.84
24.667	0.00	1.03	2.465	I O |	|	|	|	3.83
24.750	0.00	1.03	2.458	I O |	|	|	|	3.81
24.833	0.00	1.02	2.451	I O |	|	|	|	3.80
24.917	0.00	1.02	2.444	I O |	|	|	|	3.79
25.000	0.00	1.01	2.437	I O |	|	|	|	3.78
25.083	0.00	1.01	2.430	I O |	|	|	|	3.77
25.167	0.00	1.00	2.423	I O |	|	|	|	3.75
25.250	0.00	1.00	2.416	I O |	|	|	|	3.74
25.333	0.00	1.00	2.409	I O |	|	|	|	3.73
25.417	0.00	1.00	2.402	I O |	|	|	|	3.72
25.500	0.00	1.00	2.395	I O |	|	|	|	3.71
25.583	0.00	1.00	2.388	I O |	|	|	|	3.70
25.667	0.00	1.00	2.381	I O |	|	|	|	3.69
25.750	0.00	1.00	2.375	I O |	|	|	|	3.68
25.833	0.00	1.00	2.368	I O |	|	|	|	3.67
25.917	0.00	1.00	2.361	I O |	|	|	|	3.66
26.000	0.00	1.00	2.354	I O |	|	|	|	3.65
26.083	0.00	1.00	2.347	I O |	|	|	|	3.64
26.167	0.00	1.00	2.340	I O |	|	|	|	3.63
26.250	0.00	1.00	2.333	I O |	|	|	|	3.62
26.333	0.00	1.00	2.326	I O |	|	|	|	3.61
26.417	0.00	1.00	2.319	I O |	|	|	|	3.60
26.500	0.00	1.00	2.313	I O |	|	|	|	3.59
26.583	0.00	1.00	2.306	I O |	|	|	|	3.58
26.667	0.00	1.00	2.299	I O |	|	|	|	3.57
26.750	0.00	1.00	2.292	I O |	|	|	|	3.56
26.833	0.00	1.00	2.285	I O |	|	|	|	3.55
26.917	0.00	1.00	2.278	I O |	|	|	|	3.54
27.000	0.00	1.00	2.271	I O |	|	|	|	3.53
27.083	0.00	1.00	2.264	I O |	|	|	|	3.52
27.167	0.00	1.00	2.257	I O |	|	|	|	3.51
27.250	0.00	1.00	2.251	I O |	|	|	|	3.50
27.333	0.00	1.00	2.244	I O |	|	|	|	3.49
27.417	0.00	1.00	2.237	I O |	|	|	|	3.48
27.500	0.00	1.00	2.230	I O |	|	|	|	3.47

27.583	0.00	1.00	2.223	I	O	|	|	|	|	3.46
27.667	0.00	1.00	2.216	I	O	|	|	|	|	3.45
27.750	0.00	1.00	2.209	I	O	|	|	|	|	3.44
27.833	0.00	1.00	2.202	I	O	|	|	|	|	3.43
27.917	0.00	1.00	2.195	I	O	|	|	|	|	3.42
28.000	0.00	1.00	2.189	I	O	|	|	|	|	3.40
28.083	0.00	1.00	2.182	I	O	|	|	|	|	3.39
28.167	0.00	1.00	2.175	I	O	|	|	|	|	3.38
28.250	0.00	1.00	2.168	I	O	|	|	|	|	3.37
28.333	0.00	1.00	2.161	I	O	|	|	|	|	3.36
28.417	0.00	1.00	2.154	I	O	|	|	|	|	3.35
28.500	0.00	1.00	2.147	I	O	|	|	|	|	3.34
28.583	0.00	1.00	2.140	I	O	|	|	|	|	3.33
28.667	0.00	1.00	2.134	I	O	|	|	|	|	3.32
28.750	0.00	1.00	2.127	I	O	|	|	|	|	3.31
28.833	0.00	1.00	2.120	I	O	|	|	|	|	3.30
28.917	0.00	1.00	2.113	I	O	|	|	|	|	3.29
29.000	0.00	1.00	2.106	I	O	|	|	|	|	3.28
29.083	0.00	1.00	2.099	I	O	|	|	|	|	3.27
29.167	0.00	1.00	2.092	I	O	|	|	|	|	3.26
29.250	0.00	1.00	2.085	I	O	|	|	|	|	3.25
29.333	0.00	1.00	2.078	I	O	|	|	|	|	3.24
29.417	0.00	1.00	2.072	I	O	|	|	|	|	3.23
29.500	0.00	1.00	2.065	I	O	|	|	|	|	3.22
29.583	0.00	1.00	2.058	I	O	|	|	|	|	3.21
29.667	0.00	1.00	2.051	I	O	|	|	|	|	3.20
29.750	0.00	1.00	2.044	I	O	|	|	|	|	3.19
29.833	0.00	1.00	2.037	I	O	|	|	|	|	3.18
29.917	0.00	1.00	2.030	I	O	|	|	|	|	3.17
30.000	0.00	1.00	2.023	I	O	|	|	|	|	3.16
30.083	0.00	1.00	2.016	I	O	|	|	|	|	3.15
30.167	0.00	1.00	2.010	I	O	|	|	|	|	3.14
30.250	0.00	1.00	2.003	I	O	|	|	|	|	3.13
30.333	0.00	1.00	1.996	I	O	|	|	|	|	3.12
30.417	0.00	1.00	1.989	I	O	|	|	|	|	3.11
30.500	0.00	1.00	1.982	I	O	|	|	|	|	3.10
30.583	0.00	1.00	1.975	I	O	|	|	|	|	3.09
30.667	0.00	1.00	1.968	I	O	|	|	|	|	3.08
30.750	0.00	1.00	1.961	I	O	|	|	|	|	3.07
30.833	0.00	1.00	1.954	I	O	|	|	|	|	3.06
30.917	0.00	1.00	1.948	I	O	|	|	|	|	3.05
31.000	0.00	1.00	1.941	I	O	|	|	|	|	3.04
31.083	0.00	1.00	1.934	I	O	|	|	|	|	3.03
31.167	0.00	1.00	1.927	I	O	|	|	|	|	3.01
31.250	0.00	1.00	1.920	I	O	|	|	|	|	3.00
31.333	0.00	1.00	1.913	I	O	|	|	|	|	2.99
31.417	0.00	1.00	1.906	I	O	|	|	|	|	2.98
31.500	0.00	1.00	1.899	I	O	|	|	|	|	2.97
31.583	0.00	1.00	1.892	I	O	|	|	|	|	2.96
31.667	0.00	1.00	1.886	I	O	|	|	|	|	2.95
31.750	0.00	1.00	1.879	I	O	|	|	|	|	2.94
31.833	0.00	1.00	1.872	I	O	|	|	|	|	2.93
31.917	0.00	1.00	1.865	I	O	|	|	|	|	2.92
32.000	0.00	1.00	1.858	I	O	|	|	|	|	2.91
32.083	0.00	1.00	1.851	I	O	|	|	|	|	2.90
32.167	0.00	1.00	1.844	I	O	|	|	|	|	2.89
32.250	0.00	1.00	1.837	I	O	|	|	|	|	2.88
32.333	0.00	1.00	1.830	I	O	|	|	|	|	2.87
32.417	0.00	1.00	1.824	I	O	|	|	|	|	2.86
32.500	0.00	1.00	1.817	I	O	|	|	|	|	2.85
32.583	0.00	1.00	1.810	I	O	|	|	|	|	2.84
32.667	0.00	1.00	1.803	I	O	|	|	|	|	2.83
32.750	0.00	1.00	1.796	I	O	|	|	|	|	2.82
32.833	0.00	1.00	1.789	I	O	|	|	|	|	2.81
32.917	0.00	1.00	1.782	I	O	|	|	|	|	2.80
33.000	0.00	1.00	1.775	I	O	|	|	|	|	2.79
33.083	0.00	1.00	1.768	I	O	|	|	|	|	2.79
33.167	0.00	1.00	1.762	I	O	|	|	|	|	2.78
33.250	0.00	1.00	1.755	I	O	|	|	|	|	2.77

33.333	0.00	1.00	1.748	I	O	|	|	|	|	2.76
33.417	0.00	1.00	1.741	I	O	|	|	|	|	2.75
33.500	0.00	1.00	1.734	I	O	|	|	|	|	2.74
33.583	0.00	1.00	1.727	I	O	|	|	|	|	2.73
33.667	0.00	1.00	1.720	I	O	|	|	|	|	2.72
33.750	0.00	1.00	1.713	I	O	|	|	|	|	2.71
33.833	0.00	1.00	1.707	I	O	|	|	|	|	2.70
33.917	0.00	1.00	1.700	I	O	|	|	|	|	2.69
34.000	0.00	1.00	1.693	I	O	|	|	|	|	2.68
34.083	0.00	1.00	1.686	I	O	|	|	|	|	2.67
34.167	0.00	1.00	1.679	I	O	|	|	|	|	2.66
34.250	0.00	1.00	1.672	I	O	|	|	|	|	2.65
34.333	0.00	1.00	1.665	I	O	|	|	|	|	2.64
34.417	0.00	1.00	1.658	I	O	|	|	|	|	2.63
34.500	0.00	1.00	1.651	I	O	|	|	|	|	2.62
34.583	0.00	1.00	1.645	I	O	|	|	|	|	2.61
34.667	0.00	1.00	1.638	I	O	|	|	|	|	2.60
34.750	0.00	1.00	1.631	I	O	|	|	|	|	2.59
34.833	0.00	1.00	1.624	I	O	|	|	|	|	2.58
34.917	0.00	1.00	1.617	I	O	|	|	|	|	2.58
35.000	0.00	1.00	1.610	I	O	|	|	|	|	2.57
35.083	0.00	1.00	1.603	I	O	|	|	|	|	2.56
35.167	0.00	1.00	1.596	I	O	|	|	|	|	2.55
35.250	0.00	1.00	1.589	I	O	|	|	|	|	2.54
35.333	0.00	1.00	1.583	I	O	|	|	|	|	2.53
35.417	0.00	1.00	1.576	I	O	|	|	|	|	2.52
35.500	0.00	1.00	1.569	I	O	|	|	|	|	2.51
35.583	0.00	1.00	1.562	I	O	|	|	|	|	2.50
35.667	0.00	1.00	1.555	I	O	|	|	|	|	2.49
35.750	0.00	1.00	1.548	I	O	|	|	|	|	2.48
35.833	0.00	1.00	1.541	I	O	|	|	|	|	2.47
35.917	0.00	1.00	1.534	I	O	|	|	|	|	2.46
36.000	0.00	1.00	1.527	I	O	|	|	|	|	2.45
36.083	0.00	1.00	1.521	I	O	|	|	|	|	2.44
36.167	0.00	1.00	1.514	I	O	|	|	|	|	2.43
36.250	0.00	1.00	1.507	I	O	|	|	|	|	2.42
36.333	0.00	1.00	1.500	I	O	|	|	|	|	2.41
36.417	0.00	1.00	1.493	I	O	|	|	|	|	2.40
36.500	0.00	1.00	1.486	I	O	|	|	|	|	2.39
36.583	0.00	1.00	1.479	I	O	|	|	|	|	2.38
36.667	0.00	1.00	1.472	I	O	|	|	|	|	2.38
36.750	0.00	1.00	1.465	I	O	|	|	|	|	2.37
36.833	0.00	1.00	1.459	I	O	|	|	|	|	2.36
36.917	0.00	1.00	1.452	I	O	|	|	|	|	2.35
37.000	0.00	1.00	1.445	I	O	|	|	|	|	2.34
37.083	0.00	1.00	1.438	I	O	|	|	|	|	2.33
37.167	0.00	1.00	1.431	I	O	|	|	|	|	2.32
37.250	0.00	1.00	1.424	I	O	|	|	|	|	2.31
37.333	0.00	1.00	1.417	I	O	|	|	|	|	2.30
37.417	0.00	1.00	1.410	I	O	|	|	|	|	2.29
37.500	0.00	1.00	1.403	I	O	|	|	|	|	2.28
37.583	0.00	1.00	1.397	I	O	|	|	|	|	2.27
37.667	0.00	1.00	1.390	I	O	|	|	|	|	2.26
37.750	0.00	1.00	1.383	I	O	|	|	|	|	2.25
37.833	0.00	1.00	1.376	I	O	|	|	|	|	2.24
37.917	0.00	1.00	1.369	I	O	|	|	|	|	2.23
38.000	0.00	1.00	1.362	I	O	|	|	|	|	2.22
38.083	0.00	1.00	1.355	I	O	|	|	|	|	2.21
38.167	0.00	1.00	1.348	I	O	|	|	|	|	2.20
38.250	0.00	1.00	1.341	I	O	|	|	|	|	2.19
38.333	0.00	1.00	1.335	I	O	|	|	|	|	2.18
38.417	0.00	1.00	1.328	I	O	|	|	|	|	2.18
38.500	0.00	1.00	1.321	I	O	|	|	|	|	2.17
38.583	0.00	1.00	1.314	I	O	|	|	|	|	2.16
38.667	0.00	1.00	1.307	I	O	|	|	|	|	2.15
38.750	0.00	1.00	1.300	I	O	|	|	|	|	2.14
38.833	0.00	1.00	1.293	I	O	|	|	|	|	2.13
38.917	0.00	1.00	1.286	I	O	|	|	|	|	2.12
39.000	0.00	1.00	1.280	I	O	|	|	|	|	2.11

39.083	0.00	1.00	1.273	I	O					2.10
39.167	0.00	1.00	1.266	I	O					2.09
39.250	0.00	1.00	1.259	I	O					2.08
39.333	0.00	1.00	1.252	I	O					2.07
39.417	0.00	1.00	1.245	I	O					2.06
39.500	0.00	1.00	1.238	I	O					2.05
39.583	0.00	1.00	1.231	I	O					2.04
39.667	0.00	1.00	1.224	I	O					2.03
39.750	0.00	1.00	1.218	I	O					2.02
39.833	0.00	1.00	1.211	I	O					2.01
39.917	0.00	1.00	1.204	I	O					2.00
40.000	0.00	1.00	1.197	I	O					1.99
40.083	0.00	1.00	1.190	I	O					1.99
40.167	0.00	1.00	1.183	I	O					1.98
40.250	0.00	1.00	1.176	I	O					1.97
40.333	0.00	1.00	1.169	I	O					1.96
40.417	0.00	1.00	1.162	I	O					1.95
40.500	0.00	1.00	1.156	I	O					1.94
40.583	0.00	1.00	1.149	I	O					1.93
40.667	0.00	1.00	1.142	I	O					1.92
40.750	0.00	1.00	1.135	I	O					1.91
40.833	0.00	1.00	1.128	I	O					1.90
40.917	0.00	1.00	1.121	I	O					1.89
41.000	0.00	1.00	1.114	I	O					1.88
41.083	0.00	1.00	1.107	I	O					1.88
41.167	0.00	1.00	1.100	I	O					1.87
41.250	0.00	1.00	1.094	I	O					1.86
41.333	0.00	1.00	1.087	I	O					1.85
41.417	0.00	1.00	1.080	I	O					1.84
41.500	0.00	1.00	1.073	I	O					1.83
41.583	0.00	1.00	1.066	I	O					1.82
41.667	0.00	1.00	1.059	I	O					1.81
41.750	0.00	1.00	1.052	I	O					1.80
41.833	0.00	1.00	1.045	I	O					1.79
41.917	0.00	1.00	1.038	I	O					1.78
42.000	0.00	1.00	1.032	I	O					1.77
42.083	0.00	1.00	1.025	I	O					1.76
42.167	0.00	1.00	1.018	I	O					1.76
42.250	0.00	1.00	1.011	I	O					1.75
42.333	0.00	1.00	1.004	I	O					1.74
42.417	0.00	1.00	0.997	I	O					1.73
42.500	0.00	1.00	0.990	I	O					1.72
42.583	0.00	1.00	0.983	I	O					1.71
42.667	0.00	1.00	0.976	I	O					1.70
42.750	0.00	1.00	0.970	I	O					1.69
42.833	0.00	1.00	0.963	I	O					1.68
42.917	0.00	1.00	0.956	I	O					1.67
43.000	0.00	1.00	0.949	I	O					1.66
43.083	0.00	1.00	0.942	I	O					1.65
43.167	0.00	1.00	0.935	I	O					1.65
43.250	0.00	1.00	0.928	I	O					1.64
43.333	0.00	1.00	0.921	I	O					1.63
43.417	0.00	1.00	0.914	I	O					1.62
43.500	0.00	1.00	0.908	I	O					1.61
43.583	0.00	1.00	0.901	I	O					1.60
43.667	0.00	1.00	0.894	I	O					1.59
43.750	0.00	1.00	0.887	I	O					1.58
43.833	0.00	1.00	0.880	I	O					1.57
43.917	0.00	1.00	0.873	I	O					1.56
44.000	0.00	1.00	0.866	I	O					1.55
44.083	0.00	1.00	0.859	I	O					1.54
44.167	0.00	1.00	0.853	I	O					1.54
44.250	0.00	1.00	0.846	I	O					1.53
44.333	0.00	1.00	0.839	I	O					1.52
44.417	0.00	1.00	0.832	I	O					1.51
44.500	0.00	1.00	0.825	I	O					1.50
44.583	0.00	1.00	0.818	I	O					1.49
44.667	0.00	1.00	0.811	I	O					1.48
44.750	0.00	1.00	0.804	I	O					1.47

44.833	0.00	1.00	0.797	I	O	|	|	|	|	1.46
44.917	0.00	1.00	0.791	I	O	|	|	|	|	1.45
45.000	0.00	1.00	0.784	I	O	|	|	|	|	1.44
45.083	0.00	1.00	0.777	I	O	|	|	|	|	1.43
45.167	0.00	1.00	0.770	I	O	|	|	|	|	1.43
45.250	0.00	1.00	0.763	I	O	|	|	|	|	1.42
45.333	0.00	1.00	0.756	I	O	|	|	|	|	1.41
45.417	0.00	1.00	0.749	I	O	|	|	|	|	1.40
45.500	0.00	1.00	0.742	I	O	|	|	|	|	1.39
45.583	0.00	1.00	0.735	I	O	|	|	|	|	1.38
45.667	0.00	1.00	0.729	I	O	|	|	|	|	1.37
45.750	0.00	1.00	0.722	I	O	|	|	|	|	1.36
45.833	0.00	1.00	0.715	I	O	|	|	|	|	1.35
45.917	0.00	1.00	0.708	I	O	|	|	|	|	1.34
46.000	0.00	1.00	0.701	I	O	|	|	|	|	1.33
46.083	0.00	1.00	0.694	I	O	|	|	|	|	1.32
46.167	0.00	1.00	0.687	I	O	|	|	|	|	1.31
46.250	0.00	1.00	0.680	I	O	|	|	|	|	1.31
46.333	0.00	1.00	0.673	I	O	|	|	|	|	1.30
46.417	0.00	1.00	0.667	I	O	|	|	|	|	1.29
46.500	0.00	1.00	0.660	I	O	|	|	|	|	1.28
46.583	0.00	1.00	0.653	I	O	|	|	|	|	1.27
46.667	0.00	1.00	0.646	I	O	|	|	|	|	1.26
46.750	0.00	1.00	0.639	I	O	|	|	|	|	1.25
46.833	0.00	1.00	0.632	I	O	|	|	|	|	1.24
46.917	0.00	1.00	0.625	I	O	|	|	|	|	1.23
47.000	0.00	1.00	0.618	I	O	|	|	|	|	1.22
47.083	0.00	1.00	0.611	I	O	|	|	|	|	1.21
47.167	0.00	1.00	0.605	I	O	|	|	|	|	1.20
47.250	0.00	1.00	0.598	I	O	|	|	|	|	1.20
47.333	0.00	1.00	0.591	I	O	|	|	|	|	1.19
47.417	0.00	1.00	0.584	I	O	|	|	|	|	1.18
47.500	0.00	1.00	0.577	I	O	|	|	|	|	1.17
47.583	0.00	1.00	0.570	I	O	|	|	|	|	1.16
47.667	0.00	1.00	0.563	I	O	|	|	|	|	1.15
47.750	0.00	1.00	0.556	I	O	|	|	|	|	1.14
47.833	0.00	1.00	0.549	I	O	|	|	|	|	1.13
47.917	0.00	1.00	0.543	I	O	|	|	|	|	1.12
48.000	0.00	1.00	0.536	I	O	|	|	|	|	1.11
48.083	0.00	1.00	0.529	I	O	|	|	|	|	1.10
48.167	0.00	1.00	0.522	I	O	|	|	|	|	1.09
48.250	0.00	1.00	0.515	I	O	|	|	|	|	1.09
48.333	0.00	1.00	0.508	I	O	|	|	|	|	1.08
48.417	0.00	1.00	0.501	I	O	|	|	|	|	1.07
48.500	0.00	1.00	0.494	I	O	|	|	|	|	1.06
48.583	0.00	1.00	0.487	I	O	|	|	|	|	1.05
48.667	0.00	1.00	0.481	I	O	|	|	|	|	1.04
48.750	0.00	1.00	0.474	I	O	|	|	|	|	1.03
48.833	0.00	1.00	0.467	I	O	|	|	|	|	1.02
48.917	0.00	1.00	0.460	I	O	|	|	|	|	1.01
49.000	0.00	1.00	0.453	I	O	|	|	|	|	1.00
49.083	0.00	1.00	0.446	I	O	|	|	|	|	0.99
49.167	0.00	1.00	0.439	I	O	|	|	|	|	0.98
49.250	0.00	1.00	0.432	I	O	|	|	|	|	0.98
49.333	0.00	1.00	0.426	I	O	|	|	|	|	0.97
49.417	0.00	1.00	0.419	I	O	|	|	|	|	0.96
49.500	0.00	1.00	0.412	I	O	|	|	|	|	0.95
49.583	0.00	1.00	0.405	I	O	|	|	|	|	0.94
49.667	0.00	1.00	0.398	I	O	|	|	|	|	0.93
49.750	0.00	1.00	0.391	I	O	|	|	|	|	0.92
49.833	0.00	1.00	0.384	I	O	|	|	|	|	0.91
49.917	0.00	1.00	0.377	I	O	|	|	|	|	0.90
50.000	0.00	1.00	0.370	I	O	|	|	|	|	0.89
50.083	0.00	1.00	0.364	I	O	|	|	|	|	0.89
50.167	0.00	1.00	0.357	I	O	|	|	|	|	0.88
50.250	0.00	1.00	0.350	I	O	|	|	|	|	0.87
50.333	0.00	1.00	0.343	I	O	|	|	|	|	0.86
50.417	0.00	1.00	0.336	I	O	|	|	|	|	0.85
50.500	0.00	1.00	0.329	I	O	|	|	|	|	0.84

50.583	0.00	1.00	0.322	I	O	|	|	|	0.83
50.667	0.00	1.00	0.315	I	O	|	|	|	0.82
50.750	0.00	1.00	0.308	I	O	|	|	|	0.81
50.833	0.00	1.00	0.302	I	O	|	|	|	0.80
50.917	0.00	1.00	0.295	I	O	|	|	|	0.80
51.000	0.00	1.00	0.288	I	O	|	|	|	0.79
51.083	0.00	1.00	0.281	I	O	|	|	|	0.78
51.167	0.00	1.00	0.274	I	O	|	|	|	0.77
51.250	0.00	1.00	0.267	I	O	|	|	|	0.76
51.333	0.00	1.00	0.260	I	O	|	|	|	0.75
51.417	0.00	1.00	0.253	I	O	|	|	|	0.73
51.500	0.00	1.00	0.246	I	O	|	|	|	0.71
51.583	0.00	1.00	0.240	I	O	|	|	|	0.69
51.667	0.00	1.00	0.233	I	O	|	|	|	0.67
51.750	0.00	1.00	0.226	I	O	|	|	|	0.65
51.833	0.00	1.00	0.219	I	O	|	|	|	0.63
51.917	0.00	1.00	0.212	I	O	|	|	|	0.61
52.000	0.00	1.00	0.205	I	O	|	|	|	0.59
52.083	0.00	1.00	0.198	I	O	|	|	|	0.57
52.167	0.00	1.00	0.191	I	O	|	|	|	0.55
52.250	0.00	1.00	0.184	I	O	|	|	|	0.53
52.333	0.00	1.00	0.178	I	O	|	|	|	0.51
52.417	0.00	0.99	0.171	I	O	|	|	|	0.49
52.500	0.00	0.97	0.164	I	O	|	|	|	0.47
52.583	0.00	0.95	0.157	I	O	|	|	|	0.45
52.667	0.00	0.92	0.151	I	O	|	|	|	0.44
52.750	0.00	0.90	0.145	I	O	|	|	|	0.42
52.833	0.00	0.88	0.139	I	O	|	|	|	0.40
52.917	0.00	0.86	0.133	I	O	|	|	|	0.38
53.000	0.00	0.84	0.127	I	O	|	|	|	0.36
53.083	0.00	0.82	0.121	I	O	|	|	|	0.35
53.167	0.00	0.80	0.115	I	O	|	|	|	0.33
53.250	0.00	0.78	0.110	I	O	|	|	|	0.32
53.333	0.00	0.76	0.105	I	O	|	|	|	0.30
53.417	0.00	0.74	0.099	I	O	|	|	|	0.29
53.500	0.00	0.73	0.094	I	O	|	|	|	0.27
53.583	0.00	0.71	0.089	I	O	|	|	|	0.26
53.667	0.00	0.69	0.085	I	O	|	|	|	0.24
53.750	0.00	0.68	0.080	I	O	|	|	|	0.23
53.833	0.00	0.66	0.075	I	O	|	|	|	0.21
53.917	0.00	0.65	0.071	I	O	|	|	|	0.20
54.000	0.00	0.63	0.066	I	O	|	|	|	0.19
54.083	0.00	0.61	0.062	I	O	|	|	|	0.18
54.167	0.00	0.60	0.058	I	O	|	|	|	0.16
54.250	0.00	0.59	0.054	I	O	|	|	|	0.15
54.333	0.00	0.57	0.050	I	O	|	|	|	0.14
54.417	0.00	0.56	0.046	I	O	|	|	|	0.13
54.500	0.00	0.55	0.042	I	O	|	|	|	0.12
54.583	0.00	0.53	0.038	I	O	|	|	|	0.11
54.667	0.00	0.52	0.035	I	O	|	|	|	0.10
54.750	0.00	0.51	0.031	I	O	|	|	|	0.09
54.833	0.00	0.48	0.028	I	O	|	|	|	0.08
54.917	0.00	0.43	0.025	I	O	|	|	|	0.07
55.000	0.00	0.38	0.022	I	O	|	|	|	0.06
55.083	0.00	0.34	0.020	I	O	|	|	|	0.05
55.167	0.00	0.30	0.017	I	O	|	|	|	0.05
55.250	0.00	0.27	0.015	I	O	|	|	|	0.04
55.333	0.00	0.24	0.014	I	O	|	|	|	0.04
55.417	0.00	0.21	0.012	O		|	|	|	0.03
55.500	0.00	0.19	0.011	O		|	|	|	0.03
55.583	0.00	0.16	0.010	O		|	|	|	0.03
55.667	0.00	0.15	0.008	O		|	|	|	0.02
55.750	0.00	0.13	0.008	O		|	|	|	0.02
55.833	0.00	0.12	0.007	O		|	|	|	0.02
55.917	0.00	0.10	0.006	O		|	|	|	0.02
56.000	0.00	0.09	0.005	O		|	|	|	0.01
56.083	0.00	0.08	0.005	O		|	|	|	0.01
56.167	0.00	0.07	0.004	O		|	|	|	0.01
56.250	0.00	0.06	0.004	O		|	|	|	0.01

56.333	0.00	0.06	0.003	O	|	|	|	|	0.01
56.417	0.00	0.05	0.003	O	|	|	|	|	0.01
56.500	0.00	0.04	0.003	O	|	|	|	|	0.01
56.583	0.00	0.04	0.002	O	|	|	|	|	0.01
56.667	0.00	0.04	0.002	O	|	|	|	|	0.01
56.750	0.00	0.03	0.002	O	|	|	|	|	0.00
56.833	0.00	0.03	0.002	O	|	|	|	|	0.00
56.917	0.00	0.02	0.001	O	|	|	|	|	0.00
57.000	0.00	0.02	0.001	O	|	|	|	|	0.00
57.083	0.00	0.02	0.001	O	|	|	|	|	0.00
57.167	0.00	0.02	0.001	O	|	|	|	|	0.00
57.250	0.00	0.02	0.001	O	|	|	|	|	0.00
57.333	0.00	0.01	0.001	O	|	|	|	|	0.00
57.417	0.00	0.01	0.001	O	|	|	|	|	0.00
57.500	0.00	0.01	0.001	O	|	|	|	|	0.00
57.583	0.00	0.01	0.001	O	|	|	|	|	0.00
57.667	0.00	0.01	0.000	O	|	|	|	|	0.00
57.750	0.00	0.01	0.000	O	|	|	|	|	0.00
57.833	0.00	0.01	0.000	O	|	|	|	|	0.00
57.917	0.00	0.01	0.000	O	|	|	|	|	0.00

**********HYDROGRAPH DATA**********

Number of intervals = 695
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 1.357 (CFS)
Total volume = 4.504 (Ac.Ft)

Status of hydrographs being held in storage

	Stream 1	Stream 2	Stream 3	Stream 4	Stream 5
Peak (CFS)	0.000	0.000	0.000	0.000	0.000
Vol (Ac.Ft)	0.000	0.000	0.000	0.000	0.000

****

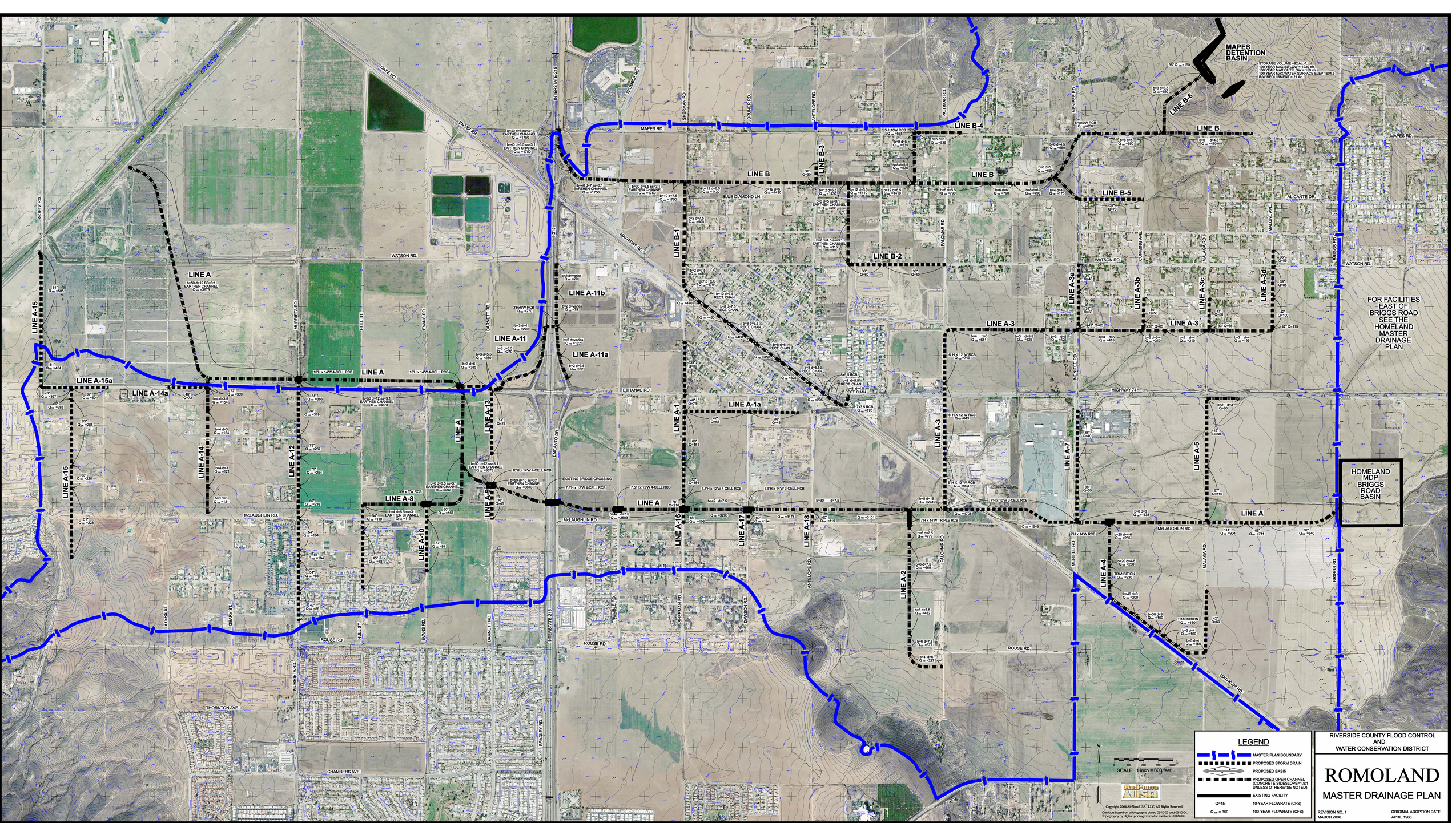
EX. 2YR-24HR Q=1.304 CFS

%INCREASE=((1.357-1.304)/1.304)*100=4.1%

4.1% IS LESS THAN 10.0% THUS HCOC REQUIREMENTS ARE MET

APPENDIX C – REFERENCES

ROMOLAND MDP

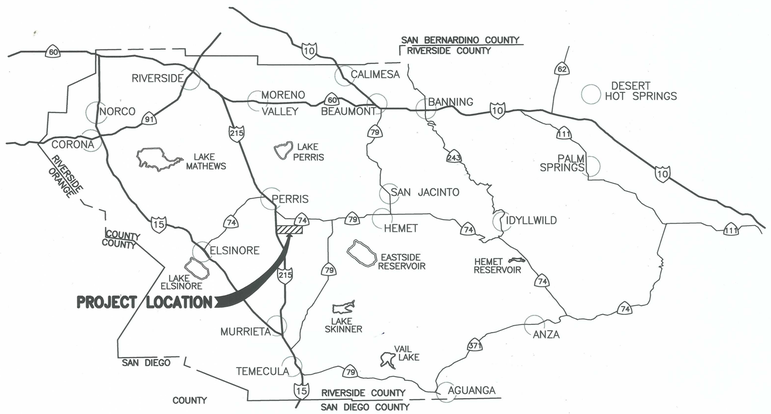

MAPES DETENTION BASIN
STORAGE VOLUME =92 Ac.-ft.
100 YEAR MAX INFLOW = 1220 cfs
100 YEAR MAX OUTFLOW = 150 cfs
100 YEAR MAX WATER SURFACE ELEV 1604.5
R/W REQUIRMENT = 21 Ac.
LINE A
LINE A-1
LINE A-1a
LINE A-2
LINE A-3
LINE A-3a
LINE A-3b
LINE A-3c
LINE A-3d
LINE A-4
LINE A-5
LINE A-7
LINE A-8
LINE A-9
LINE A-10
LINE A-11
LINE A-11a
LINE A-11b
LINE A-12
LINE A-13
LINE A-14
LINE A-14a
LINE A-15
LINE A-15a
LINE A-16
LINE A-17
LINE A-18
LINE B
LINE B-1
LINE B-2
LINE B-3
LINE B-4
LINE B-5
LINE B-6
FOR FACILITIES EAST OF BRIGGS ROAD SEE THE HOMELAND MASTER DRAINAGE PLAN
HOMELAND MDP BRIGGS ROAD BASIN
MAPES RD.
WATSON RD.
ETHANAC RD.
HIGHWAY 74
McLAUGHLIN RD.
ROUSE RD.
MATHEWS RD.
ALICANTE DR.
BLUE DIAMOND LN.
CASE RD.
GOETZ RD.
MURRIETA RD.
HULL ST.
EVANS RD.
BARNETT RD.
ENCANTO DR.
INTERSTATE-215
I-215
SHERMAN RD.
TRUMBLE RD.
ANTELOPE RD.
BRUNER RD.
PALOMAR RD.
DAWSON RD.
MENIFEE RD.
CUMMING AVE.
MALAGA RD.
MALONE AVE.
BRIGGS RD.
BYERS ST.
GEARY ST.
THORNTON AVE.
CHAMBERS AVE.
BRADLEY RD.
TRUMBLE RD.
EXISTING BRIDGE CROSSING
LEGEND
MASTER PLAN BOUNDARY
PROPOSED STORM DRAIN
PROPOSED BASIN
PROPOSED OPEN CHANNEL (CONCRETE SIDESLOPE=1.5:1 UNLESS OTHERWISE NOTED)
EXISTING FACILITY
Q=45 10-YEAR FLOWRATE (CFS)
Q 100 = 350 100-YEAR FLOWRATE (CFS)
SCALE: 1 inch = 600 feet
Copyright 2004 AirPhotoUSA, LLC. All Rights Reserved
Contours based on photography dated 03-10-03 and 03-10-04.
Topography by digital photogrammetric methods. (NAD 83)
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
ROMOLAND
MASTER DRAINAGE PLAN
REVISION NO. 1
MARCH 2006
ORIGINAL ADOPTION DATE
APRIL 1988

LINE-A AS-BUILTS

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

ROMOLAND MDP–LINE A, STAGE 4

SEE SHEET 1A AND SPECIAL PROVISIONS FOR SCRRA AND RCTC NOTES



VICINITY MAP

N.T.S.

BNSF AND RCTC NOTES:

1. CONTRACTOR SHALL CONTACT THE BURLINGTON NORTHERN SANTA FE (BNSF) ROADMASTER, DAVE GONZALES; PHONE NO. 909–386–4061, AT LEAST FIVE (5) WORKING DAYS (MONDAY THROUGH FRIDAY) BEFORE STARTING CONSTRUCTION.

2. CONTRACTOR SHALL CONTACT THE BURLINGTON NORTHERN SANTA FE (BNSF) ROADMASTER, DAVE GONZALES; PHONE NO. 909–386–4061, AT LEAST TEN (10) WORKING DAYS (MONDAY THROUGH FRIDAY) IN ADVANCE OF WHEN FLAGGING SERVICES WILL BE REQUIRED. EACH TIME A FLAGGER IS CALLED, THE MINIMUM PERIOD OF BILLING SHALL BE THE EIGHT (8) HOUR BASIC DAY. THE COST OF FLAGGING SERVICES PROVIDED BY THE RAILWAY, WHEN DEEMED NECESSARY BY THE RAILWAY'S REPRESENTATIVE, WILL BE BORNE BY THE CONTRACTOR.

3. CONTRACTOR SHALL CONTACT THE RIVERSIDE COUNTY TRANSPORTATION COMMISSION, CLAUDIA CHASE 951–787–7937, AT LEAST 5 WORKING DAYS (MONDAY THROUGH FRIDAY) BEFORE STARTING CONSTRUCTION.

4. RAIL TRACK ELEVATIONS OVER THE RCB SHALL BE PROFILED TO DETECT ANY CHANGE IN ELEVATION. BEFORE AND AFTER PROFILES SHALL BE PERFORMED BY A LICENSED SURVEYOR. A LETTER REPORT FROM THE SURVEYOR SHALL BE SUBMITTED TO BNSF AND RCTC STATING MONITORING RESULTS, WITHIN SEVEN (7) DAYS OF THE COMPLETION WORK WITHIN THE RCTC R/W. THE REPORT SHALL BE SENT TO GREG ROUSSEAU OF BNSF AT 740 EAST CARNEGIE DRIVE, SAN BERNARDINO, CALIFORNIA AND CLAUDIA CHASE OF RCTC AT POST OFFICE BOX 12008, RIVERSIDE, CALIFORNIA 92502–2208.

5. A SAFETY ORIENTATION COURSE SHALL BE COMPLETED BY ALL WORKERS PRIOR TO ENTERING RAILROAD PROPERTY. IT IS THE CONTRACTOR'S RESPONSIBILITY TO CONDUCT THE SAFETY TRAINING AND IMPLEMENTATION OF A SAFETY PROGRAM FOR ITS EMPLOYEES. TRAINING MATERIALS ARE AVAILABLE ON THE WEB SITE: WWW.CONTRACTORORIENTATION.COM THE CONTRACTOR MUST COMPLY WITH ALL FEDERAL, STATE AND LOCAL SAFETY REGULATIONS.

6. THE CONTRACTOR SHALL NOTIFY BNSF, RCTC AND RCFCD WITHIN FORTY FIVE (45) DAYS OF THE DATE AND LOCATION FOR FABRICATION OF RCB ELEMENTS. INSPECTIONS OF THESE ELEMENTS WILL BE MADE BY RCFCD PERSONNEL DURING FABRICATION. THE CONTRACTOR WILL BE REQUIRED TO PRESENT A COPY OF THE RCFCD INSPECTION CERTIFICATION TO THE BNSF AND RCTC REPRESENTATIVES AT THE CONSTRUCTION COORDINATION MEETING.

7. CONTRACTOR SHALL CONTACT BNSF, RCTC AND RCFCD FOR A CONSTRUCTION COORDINATION MEETING, PRIOR TO BNSF PROVIDING A TRACK OUTAGE SCHEDULE.

GENERAL NOTES

1. ALL STATIONING REFERS TO CENTERLINE OF CONSTRUCTION.
2. ALL CHANNEL/STORM DRAIN REFERENCES AND CROSS SECTIONS ARE TAKEN LOOKING DOWNSTREAM.
3. TOPOGRAPHY BY AERIAL PHOTOGRAPHS TAKEN AT AN ALTITUDE NOT TO EXCEED A FLYING HEIGHT TO CONTOUR INTERVAL RATIO OF 1800. PHOTOGRAPHY DATED 11–15–03
4. THE VERTICAL DATUM IS DERIVED FROM (NGVD 29). THE HORIZONTAL DATUM IS DERIVED FROM (NAD 83).
5. STANDARD DRAWINGS CALLED FOR ON THE PLAN & PROFILE SHALL CONFORM TO R.C.F.C. & W.C.D. STD. DRAWINGS, CALTRANS OR RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT STANDARD PLANS.
6. ELEVATIONS AND LOCATIONS OF UTILITIES WERE OBTAINED FROM AVAILABLE INFORMATION AND ARE SHOWN APPROXIMATELY ON THESE PLANS. 48 HOURS BEFORE EXCAVATION CALL UNDERGROUND SERVICE ALERT AT 1–800–227–2600. ALL UTILITIES SHALL BE PROTECTED IN PLACE EXCEPT AS NOTED ON PLANS AND SPECIFICATIONS.
7. THE CONTRACTOR IS REQUIRED TO CONTACT ALL UTILITY AGENCIES REGARDING TEMPORARY SUPPORT AND SHORING REQUIREMENTS FOR THE VARIOUS UTILITY LINES SHOWN ON THESE PLANS.
8. ALL OPENINGS RESULTING FROM CUTTING OR PARTIAL REMOVAL OF EXIST. CULVERTS, PIPES, OR SIMILAR STRUCTURES TO BE ABANDONED, SHALL BE SEALED AT BOTH ENDS WITH 6" MIN. CLASS "B" CONCRETE OR REMOVED.
9. ALL RECONSTRUCTION, RESURFACING AND PAVEMENT DELINATION, CURBS, SIDEWALKS AND OTHER IMPROVEMENTS ARE TO BE RECONSTRUCTED IN KIND USING THE SAME STRUCTURAL SECTION, LOCATIONS AND ELEVATIONS AS THE EXISTING IMPROVEMENTS, UNLESS OTHERWISE NOTED.
10. ⊕ INDICATES APPROX. SOIL BORING LOCATION PER SOILS REPORT BY CHJ DATED APRIL 27, 2004.
11. THE CONTRACTOR SHALL CONSTRUCT THE FLOOD CONTROL IMPROVEMENTS SHOWN ON THE DRAWINGS IN CONFORMANCE WITH THE REQUIREMENTS OF THE RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT'S MEMORANDUM OF UNDERSTANDING STANDARD SPECIFICATIONS DATED SEPTEMBER 1984, AND DESIGN MANUAL STANDARD DRAWINGS DATED APRIL 2004.
12. AN ENCROACHMENT PERMIT IS REQUIRED FROM R.C.T.D., PLEASE CONTACT MOJAHED SALAMA AT (951) 955–6790. IF AN ENCROACHMENT PERMIT IS REQUIRED FROM RIVERSIDE COUNTY FLOOD CONTROL, THEN CONTACT ED LOTZ AT (951) 955–1266. AFTER THE PERMIT IS ISSUED THE DISTRICT MUST BE NOTIFIED ONE WEEK PRIOR TO CONSTRUCTION.
13. AN ENCROACHMENT PERMIT IS REQUIRED BY THE CITY OF PERRIS. CONTACT SHARON ERB AT (951) 943-6504.

INDEX

	SHEET NO.:
TITLE SHEET	1
PLAN & PROFILE	2–12
STREET CROSSING DETAILS	13–19
STORM DRAIN PROFILES	20–21
STRUCTURAL & TRANSITION DETAILS	22–25
SECTIONS & DETAILS	26 & 27
RAILROAD PRE-CAST RCB DETAILS (SCRRA/RCTC)	28
E.M.W.D. WATER RELOCATION PLANS	29–30
LINE A–18 PLAN AND PROFILE	31

R.C.F.C. & W.C.D. STANDARD DRAWINGS

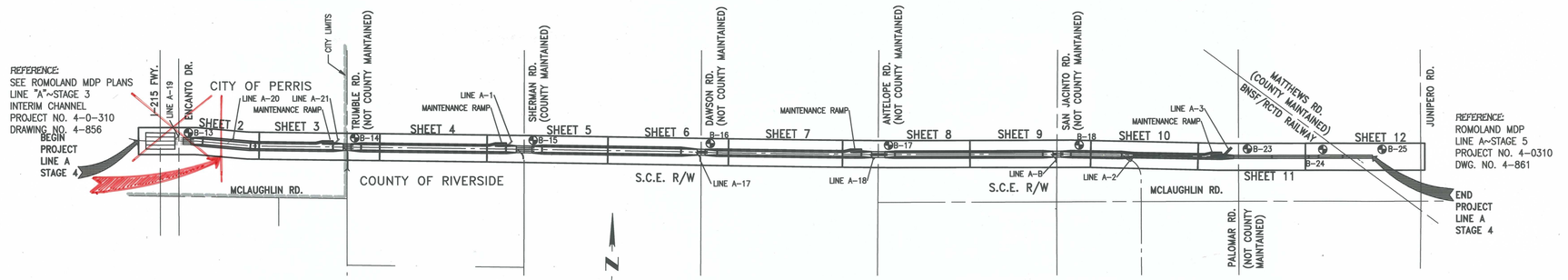
JS 226	JUNCTION STRUCTURE No. 1
JS 228	JUNCTION STRUCTURE No. 3
JS 232	JUNCTION STRUCTURE NO. 7
MH 253	MANHOLE NO. 3
TS 303	TRANSITION STRUCTURE No. 3
CH 326	TRAPEZOIDAL CHANNEL DETAILS
CH 329	TRANSITION STRUCTURAL DETAILS
CH 330	MAINTENANCE RAMP FOR TRAPEZOIDAL CHANNEL
M 801	CHAIN LINK FENCE DETAILS
M 814	ABBREVIATIONS AND SYMBOLS
M 815	BEDDING AND PAY LINES
M 816	CONCRETE BULKHEAD
CB 108	INLET TYPE X

R.C.T.D. STANDARD DRAWINGS

200	TYPE A–6 CURB
207	CONCRETE DRIVEWAY APPROACH (W=14')
300	CURB INLET CATCH BASIN (W=4')
311	GUTTER DEPRESSION, CASE C

CALTRANS STANDARDS

B11–47	CABLE RAILING
D80	REINFORCED CONCRETE SINGLE BOX CULVERT
D81	REINFORCED CONCRETE DOUBLE BOX CULVERT
D85	BOX CULVERT WINGWALL, TYPE "D"



INDEX MAP

T.5S., R.3W. SECTIONS 14 & 15
N.T.S.

NOTICE TO CONTRACTOR:

THE EXISTENCE AND LOCATIONS OF ALL UNDERGROUND UTILITIES (UTILITY PIPES, STRUCTURES, ETC.) SHOWN ON THESE PLANS WERE ASCERTAINED BY A REVIEW OF RECORDS PROVIDED BY THESE MEMBER AGENCIES AND ARE APPROXIMATE. NEITHER THE OWNER NOR THE ENGINEER ASSUMES ANY RESPONSIBILITY FOR UTILITIES NOT SHOWN OR NOT IN THE LOCATION SHOWN.

THE CONTRACTOR IS REQUIRED TO TAKE DUE PRECAUTIONARY MEASURES TO PROTECT THE UTILITY LINES SHOWN AND ANY OTHER LINES NOT OF RECORD OR NOT SHOWN ON THESE PLANS. LOCATIONS OF UTILITIES SHALL BE VERIFIED BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF CONSTRUCTION.

CALL UNDERGROUND SERVICE ALERT (U.S.A.) 1–800–227–2600 AT LEAST 2 WORKING DAYS PRIOR TO EXCAVATION.

MAINTENANCE RESPONSIBILITIES:

R.C.F.C.D. & W.C.D. MAINTAINS:

TRAPEZOIDAL CHANNEL AND TRANSITION STRUCTURES,
FROM STA 121+54.00 TO STA 123+70.00,
FROM STA 124+88.00 TO STA 136+25.71,
FROM STA 136+85.71 TO STA 149+16.80
FROM STA 150+34.80 TO STA 162+65.86
FROM STA 163+25.86 TO STA 175+65.71
FROM STA 176+65.71 TO STA 189+17.28
FROM STA 189+77.28 TO STA 202+64.54
7.0'H x 11.0'W RCB (2 CELL)
FROM STA 202+64.54 TO STA 213+00.00.

R.C.T.D. MAINTAINS:

STRUCTURAL INTEGRITY OF:
7.5'H x 12.0'W RCB (4 CELLS)
FROM STA 136+25.71 TO STA 136+85.71 (TRUMBLE RD.)
7.5'H x 12.0'W RCB (4 CELLS)
FROM STA 149+16.80 TO STA 150+34.80 (SHERMAN RD.)
7.5'H x 14.0'W RCB (3 CELLS)
FROM STA 162+65.86 TO STA 163+25.83 (DAWSON RD.)
8.0'H x 14.0'W RCB (3 CELLS)
FROM STA 175+65.71 TO STA 176+65.71 (ANTELOPE RD.)
7.5'H x 14.0'W RCB (3 CELLS)
FROM STA 189+17.28 TO STA 189+77.28 (SAN JACINTO RD.)

CITY OF PERRIS MAINTAINS:

STRUCTURAL INTEGRITY OF:
10.75'H x 12.0'W RCB (4 CELLS)
FROM STA 123+70.00 TO STA 124+88.00 (ENCANTO DR.)

RECORD DRAWINGS
APPROVED BY: Ronald Goethals
DATE: 2/9/17

IP050154 MS4051 CALTRANS PERMIT No. 08–05–N–MC–0355

SEAL–COUNTY

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12–31–08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
RECOMMENDED Alan French 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12–31–08
12/18/07 DATE

CITY OF PERRIS
HABIB M. MOTLAGH 12-17-07 DATE

REGISTERED PROFESSIONAL ENGINEER SCOTT R. WILDEBRANDT NO. C44762 EXP. 3–31–08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686–1070
FAX (951) 788–1256
PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3–31–08

Don't Dig...Until You Call U.S.A. Toll Free 1–800–227–2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327–1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 8, 18.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES.	MTK	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: DEC–2007
CHECKED BY: J.C.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: Stuart E. Mc.K.
PLANNING ENGINEER
DATE: 12-21-2007
APPROVED BY:
CHIEF ENGINEER
DATE: 12/21/07

ROMOLAND MDP
LINE A – STAGE 4
TITLE SHEET

PROJECT NO. 4–0–310
DRAWING NO. 4–846
SHEET NO. 1 OF 31

G:\2003\03-0330\DWG\PROJ\03330title.mxd-Master.prc12/11/2007

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

SCRRA AND RCTC NOTES:

1. CONTRACTOR SHALL CONTACT THE SOUTHERN CALIFORNIA REGIONAL RAIL AUTHORITY (SCRRA), CHRISTOS SOURMELIS 909–394–3418, AT LEAST 5 WORKING DAYS (MONDAY THROUGH FRIDAY) BEFORE STARTING CONSTRUCTION.

2. CONTRACTOR SHALL CONTACT THE RIVERSIDE COUNTY TRANSPORTATION COMMISSION, RUBY ARELLANO 951–787–7141, AT LEAST 5 WORKING DAYS (MONDAY THROUGH FRIDAY) BEFORE STARTING CONSTRUCTION.

3. RAIL TRACK ELEVATIONS OVER THE RCB SHALL BE PROFILED TO DETECT ANY CHANGE IN ELEVATION. BEFORE AND AFTER PROFILES SHALL BE PERFORMED BY A LICENSED SURVEYOR.

4. A LETTER REPORT FROM THE SURVEYOR SHALL BE SUBMITTED TO SCRRA AND RCTC STATING MONITORING RESULTS, WITHIN SEVEN (7) DAYS OF THE COMPLETION WORK WITHIN THE RCTC R/W. THE REPORT SHALL BE SENT TO CHRISTOS SOURMELIS OF SCRRA AT 279 E. ARROW HIGHWAY, SUITE 101, SAN DIMAS, CA 91773 AND RUBY ARELLANO OF RCTC AT POST OFFICE BOX 12008, RIVERSIDE, CALIFORNIA 92502–2208.

5. THE CONTRACTOR SHALL NOTIFY SCRRA, RCTC AND RCFCD WITHIN FORTY FIVE (45) DAYS OF THE DATE AND LOCATION FOR FABRICATION OF RCB ELEMENTS. INSPECTIONS OF THESE ELEMENTS WILL BE MADE BY RCFCD PERSONNEL DURING FABRICATION. THE CONTRACTOR WILL BE REQUIRED TO PRESENT A COPY OF THE RCFCD INSPECTION CERTIFICATION TO THE SCRAA AND RCTC REPRESENTATIVES AT THE CONSTRUCTION COORDINATION MEETING.

6. BEFORE EXCAVATING, THE CONTRACTOR MUST DETERMINE WHETHER ANY UNDERGROUND PIPE LINES, ELECTRIC WIRES, OR CABLES, INCLUDING FIBER OPTIC CABLE SYSTEMS, ARE PRESENT AND LOCATED WITHIN THE PROJECT WORK AREA BY CALLING THE SOUTHERN CALIFORNIA UNDERGROUND SERVICE ALERT AT 811.

7. CONTRACTOR IS TO COMPLETE SCRRA'S TEMPORARY RIGHT OF ENTRY AGREEMENT, FORM 6". THIS FORM IS AVAILABLE ON SCRRA'S WEBSITE AT WWW.METROLINKTRAINS.COM ("ABOUT US", AND "ENGINEERING AND CONSTRUCTION").

8. THE PIPELINE CROSSING CONSTRUCTION WILL BE DONE AS PER SCRRA ENGINEERING STANDARD ES5001.

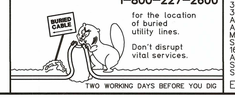
9. ANY PROPOSED EXCAVATION THAT MAY OCCUR IN SCRRA RIGHT–OF–WAY OR THAT MAY AFFECT OPERATIONS ON SCRRA TRACKS MUST ADHERE TO THE DESIGN, SUBMITTAL AND REVIEW REQUIREMENTS PRESENTED IN SCRRA'S EXCAVATION SUPPORT GUIDELINES AND SHALL NOT PROCEED WITHOUT ACCEPTANCE BY SCRRA. THE GUIDELINES ARE AVAILABLE ON SCRRA'S WEBSITE WWW.METROLINKTRAINS.COM, (ABOUT US, AND ENGINEERING AND CONSTRUCTION).

RECORD DRAWINGS

APPROVED BY: [signature]

DATE: 2/9/17

Don't Dig...Until You Call U.S.A. Toll Free 1–800–227–2600 for the location of buried utility lines. Don't disrupt vital services.



TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
B.M. NO. S 327–1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON, TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935, AND SET IN THE TOP OF A CONCRETE POST.
EL. 1478.07

REF.	REVISIONS	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY: ROHINI MUSTAFA
DRAWN BY: MICHAEL ARMENTA
DATE DRAWN: AUGUST 2014

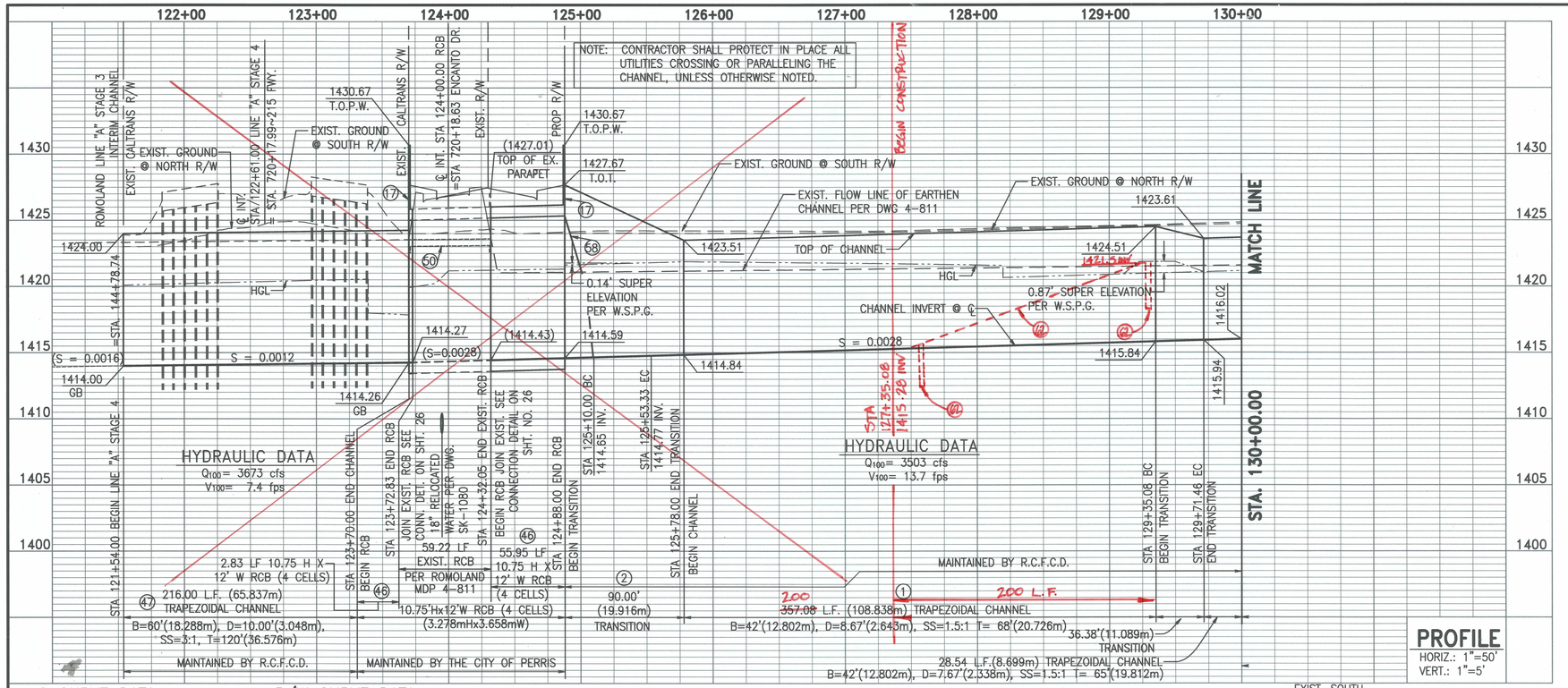
RECOMMENDED FOR APPROVAL BY: [signature]
DATE: 9/22/2014

APPROVED BY: [signature]
DATE: 22 Sept 2014

ROMOLAND MDP LINE A
STAGE 4

TITLE SHEET
SCRRA AND RCTC NOTES

PROJECT NO. 4–00310–04
DRAWING NO. 4–846
SHEET NO. 1A OF 31



PROFILE

HORIZ.: 1"=50'
VERT.: 1"=5'

NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B" , "D"& "T" PER PLAN)
2. CONSTRUCT TRANSITION STRUCTURE PER STD. CH329, DETAILS ON SHEETS NO. 24 & 25
6. INSTALL 3" (0.076m)THICK CL 2 AGGREGATE BASE, ON 14' (4.267m) ACCESS RD.
7. INSTALL 6' (1.829m) HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' (4.267m) WIDE DOUBLE DRIVE GATE PER STD. M801
16. CONSTRUCT CONCRETE DRIVEWAY PER R.C.T.D. STD. 207 (W=PER PLAN)
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23
46. CONSTRUCT 10.75'Hx12'W RCB (4 CELLS) PER CALTRANS STD. D81
47. CONSTRUCT TRAPEZOIDAL CHANNEL PER SECTION Z-Z ON SHEET NO. 26
48. CONSTRUCT HEADWALL PER CALTRANS STD. D-85
50. REMOVE EXIST. 6" CONCRETE INV. AT 2 MIDDLE CELLS AND SOIL BACKFILL INSIDE BOX.
58. CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
62. REMOVE EXISTING INTERIM STRUCTURES ⚠

Ⓐ ℄ CURVE DATA

Δ = 4°57'54"
R = 500.00' (152.40m)
T = 21.68' (6.61m)
L = 43.33' (13.21m)
BC = STA. 125+10.00
EC = STA. 125+53.33

Ⓒ R/W CURVE DATA

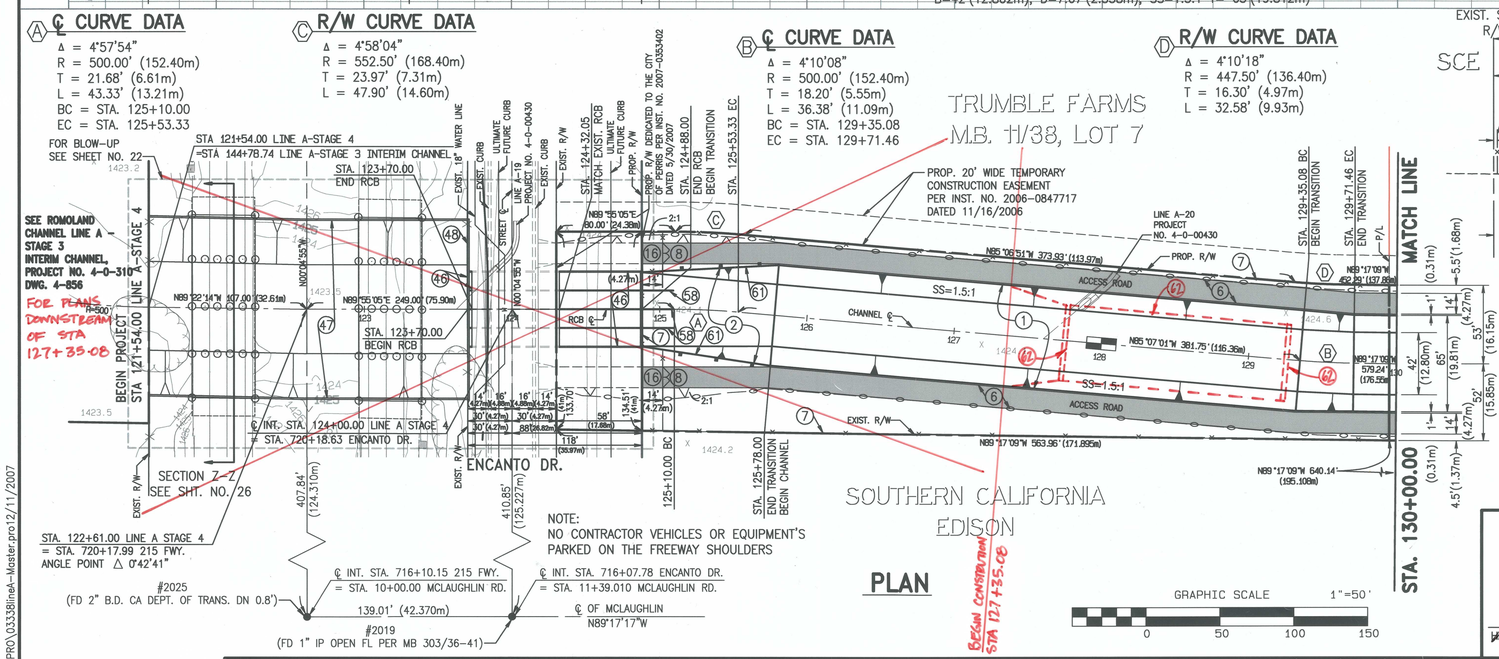
Δ = 4°58'04"
R = 552.50' (168.40m)
T = 23.97' (7.31m)
L = 47.90' (14.60m)

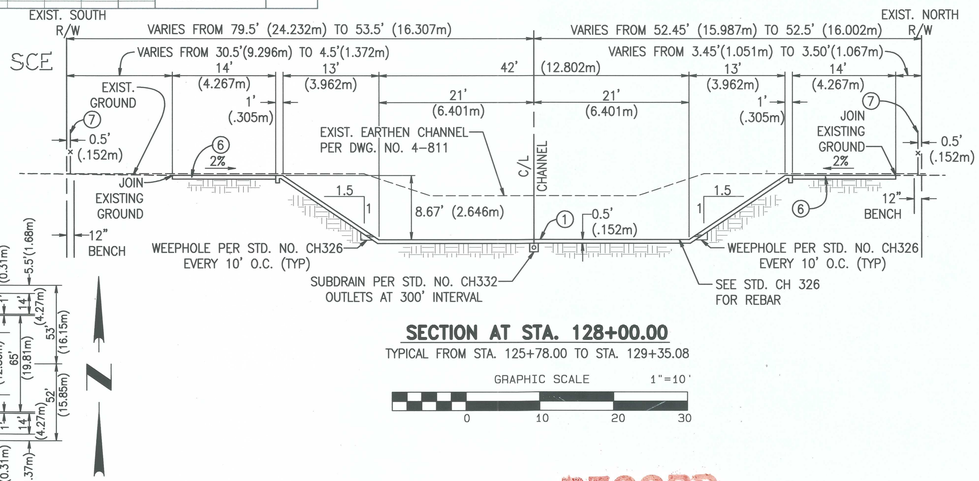
Ⓑ ℄ CURVE DATA

Δ = 4°10'08"
R = 500.00' (152.40m)
T = 18.20' (5.55m)
L = 36.38' (11.09m)
BC = STA. 129+35.08
EC = STA. 129+71.46

Ⓓ R/W CURVE DATA

Δ = 4°10'18"
R = 447.50' (136.40m)
T = 16.30' (4.97m)
L = 32.58' (9.93m)





SECTION AT STA. 128+00.00

TYPICAL FROM STA. 125+78.00 TO STA. 129+35.08

GRAPHIC SCALE 1"=10'
0 10 20 30

CITY OF PERRIS

HABIB M. MOTLAGH — DATE 12-17-07

RECORD DRAWINGS
APPROVED BY: [signature]
DATE: 2/9/17

CALTRANS PERMIT No. 08-05-N-MC-0355

REGISTERED PROFESSIONAL ENGINEER — SCOTT R. HILDEBRANDT — NO. C44762 EXP. 3-31-08 — CIVIL — STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: _____ DATE: _____
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
⚠	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	SRH	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: [signature] DATE: 12/21/07
APPROVED BY: [signature] DATE: 12-21-2007

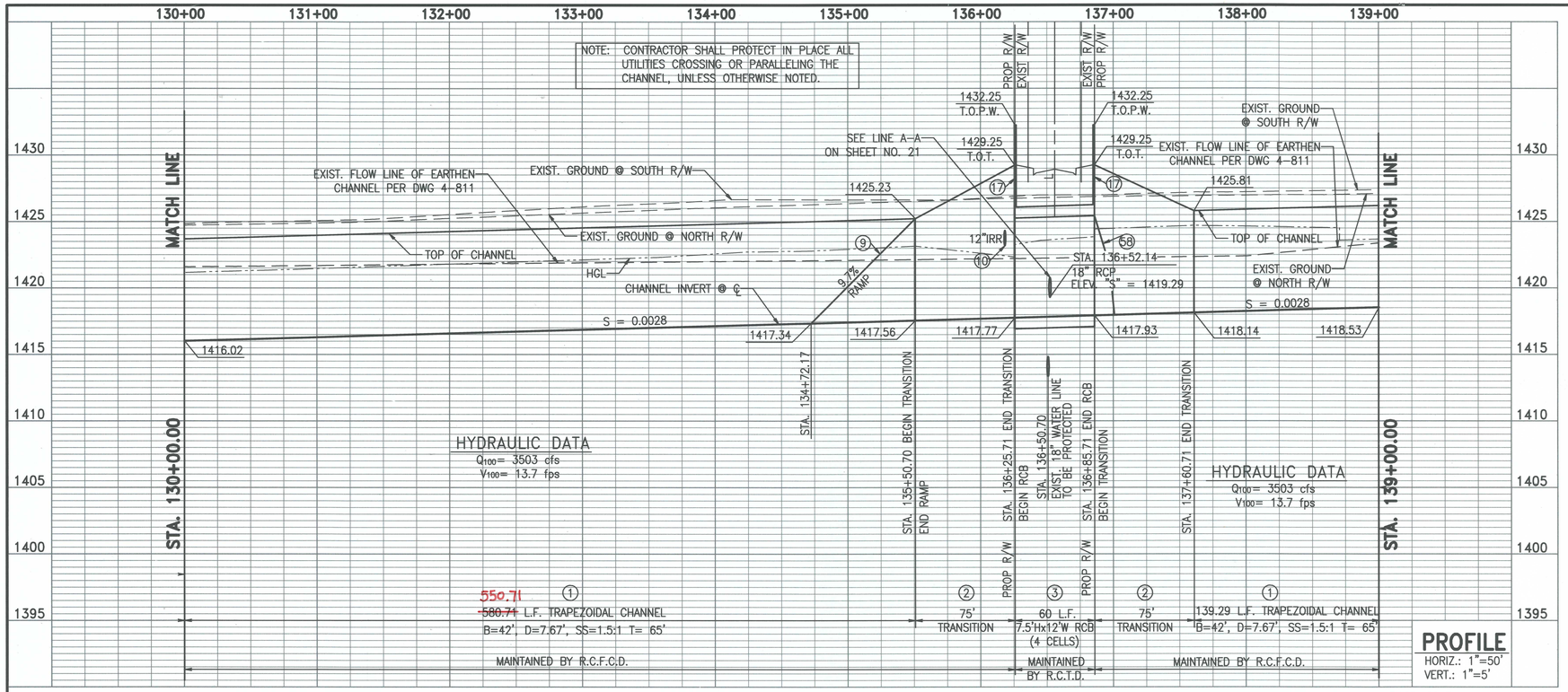
ROMOLAND MDP LINE A - STAGE 4

STA. 121+54.00 TO STA. 130+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 2 OF 31

3

G:\2003\03-0338\DWG&PRO\03338line4-Master.pro12/11/2007



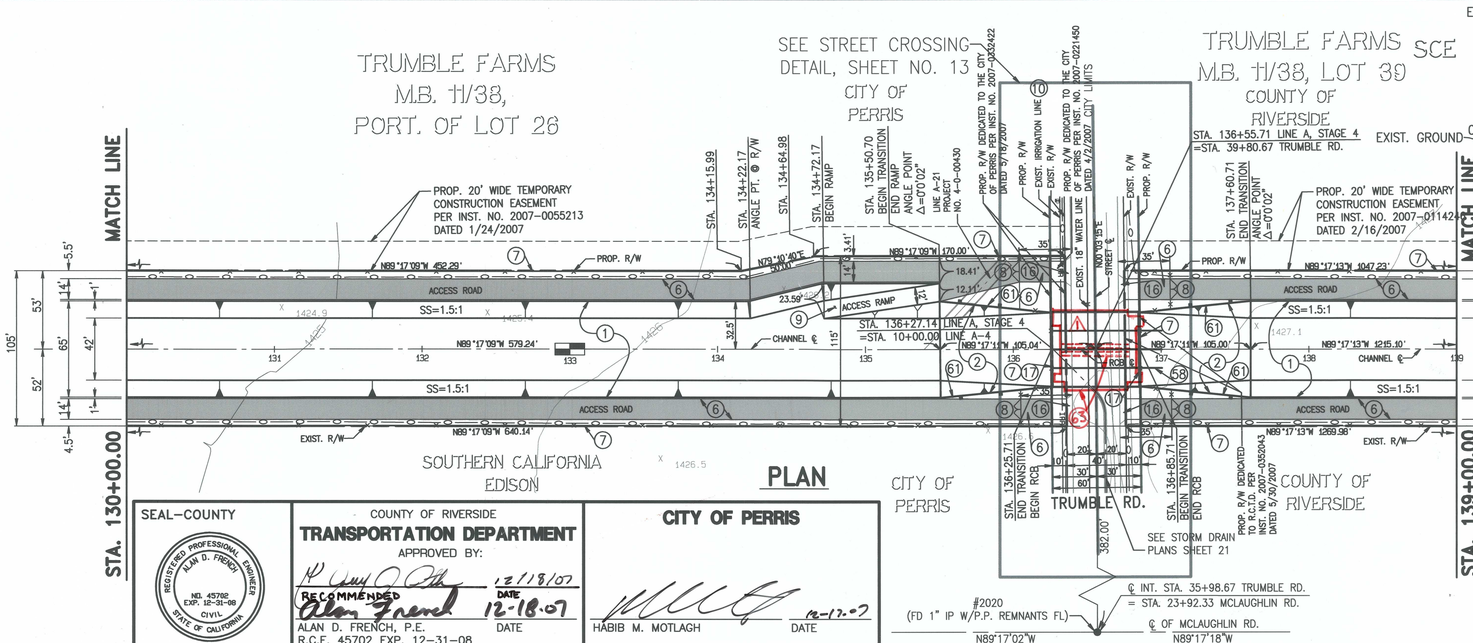
PROFILE

HORIZ.: 1"=50'
VERT.: 1"=5'

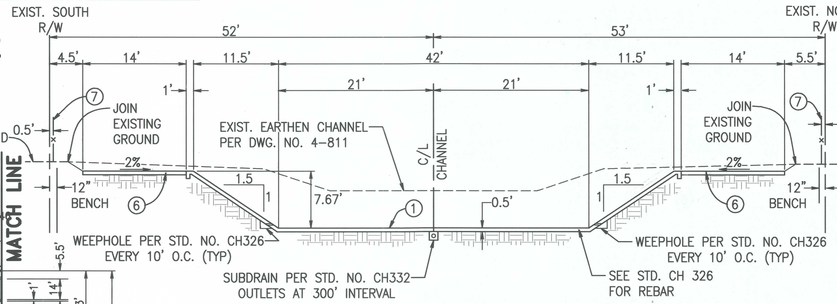
NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D"& "T" PER PLAN)
2. CONSTRUCT TRANSITION STRUCTURE PER STD. CH329, DETAILS ON SHEETS NO. 24 & 25
3. CONSTRUCT 7.5'Hx12'W RCB (4 CELLS) PER CALTRANS STD. D81
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
9. CONSTRUCT 12' MAINTENANCE RAMP FOR TRAPEZOIDAL CHANNEL PER STD. CH330
10. EXISTING IRRIGATION LINE TO BE REMOVED AND PLUGGED WITHIN PROPOSED R.C.F.C.D. RIGHT-OF-WAY PER GENERAL NOTE NO. 8 ON SHEET NO. 1
16. CONSTRUCT CONCRETE DRIVEWAY PER R.C.T.D. STD 207 (W=PER PLAN ON SHEET NO. 13)
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23
58. CONSTRUCT PIER NOSE PER DETAIL ON SHEET NO. 27
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47

⚠ 63. REMOVE EXISTING CONCRETE DIP CROSSING AND 24 INCH DIAMETER CMP± (CULVERTS) AND REMOVE HEADWALL.



PLAN



SECTION AT STA. 133+00.00

TYPICAL FROM STA. 130+00.00 TO STA. 134+15.99
AND FROM STA. 137+60.71 TO STA. 139+00.00

GRAPHIC SCALE 1"=10'
0 10 20 30

GRAPHIC SCALE 1"=50'
0 50 100 150

SEAL-COUNTY
REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH ND. 45762 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
RECOMMENDED 12/18/07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

CITY OF PERRIS
HABIB M. MOTLAGH 12-17-07 DATE

RECORD DRAWINGS
APPROVED BY: Stuart E. Kirkham
DATE: 2/9/17

IP050154 MS4051

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12/13/07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
⚠	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	MM	2/9/17

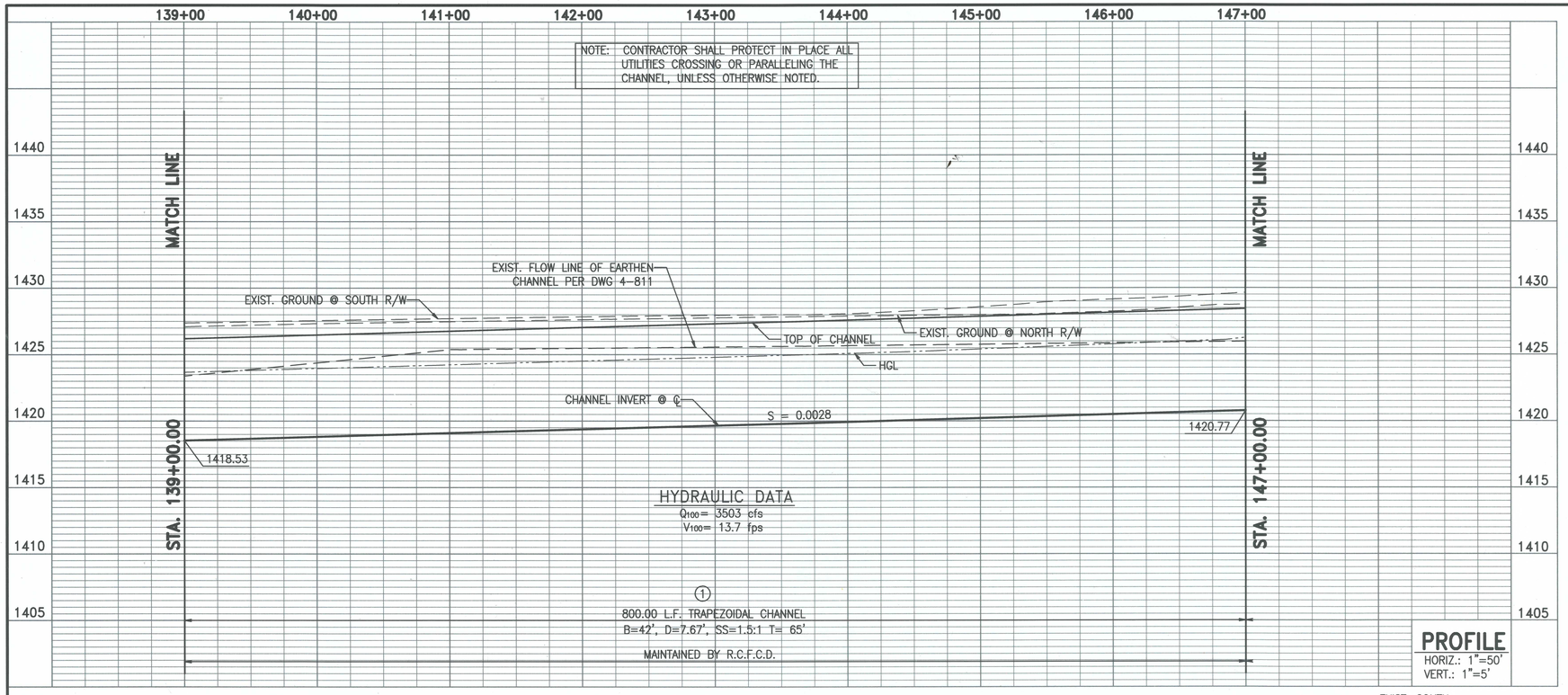
DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/31/07
APPROVED BY: Stuart E. Kirkham DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
STA. 130+00.00 TO STA. 139+00.00

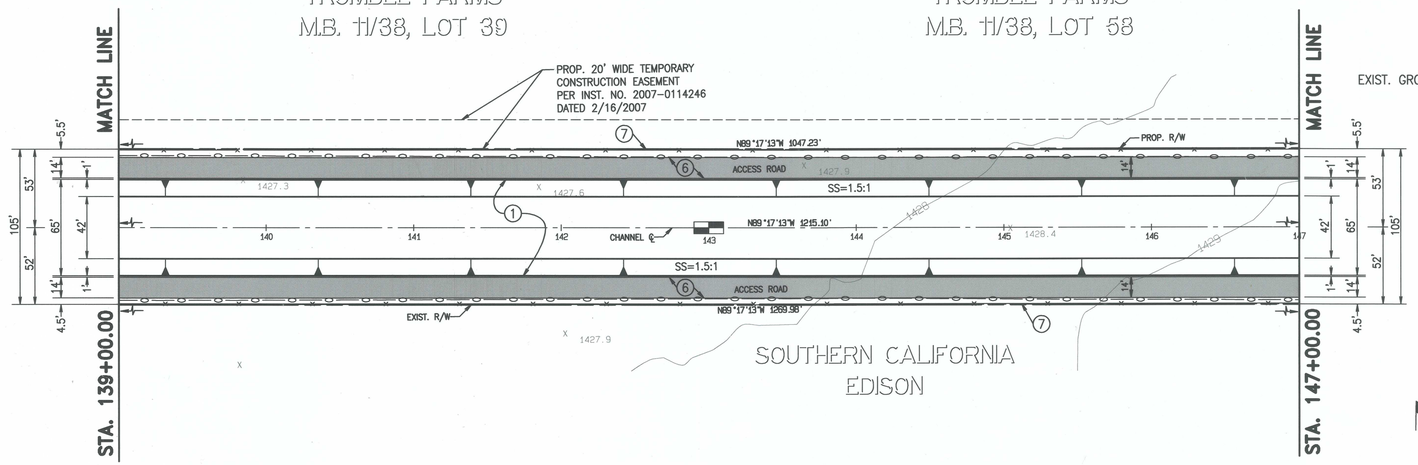
PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 3 OF 31

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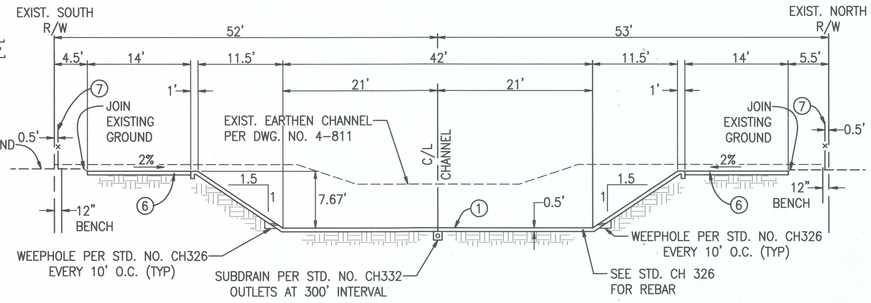


NOTES

① CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D"& "T" PER PLAN).
⑥ INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
⑦ INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801



PLAN



SECTION AT STA. 143+00.00

TYPICAL FROM STA. 139+00.00 TO STA. 147+00.00

GRAPHIC SCALE 1"=10'
0 10 20 30

N

GRAPHIC SCALE 1"=50'
0 50 100 150

RECORD DRAWINGS
APPROVED BY: Stuart E. McKittrick
DATE: 2/9/17

IP050154 MS4051

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH (951) 686-1070

PREPARED BY: [signature] DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 8, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

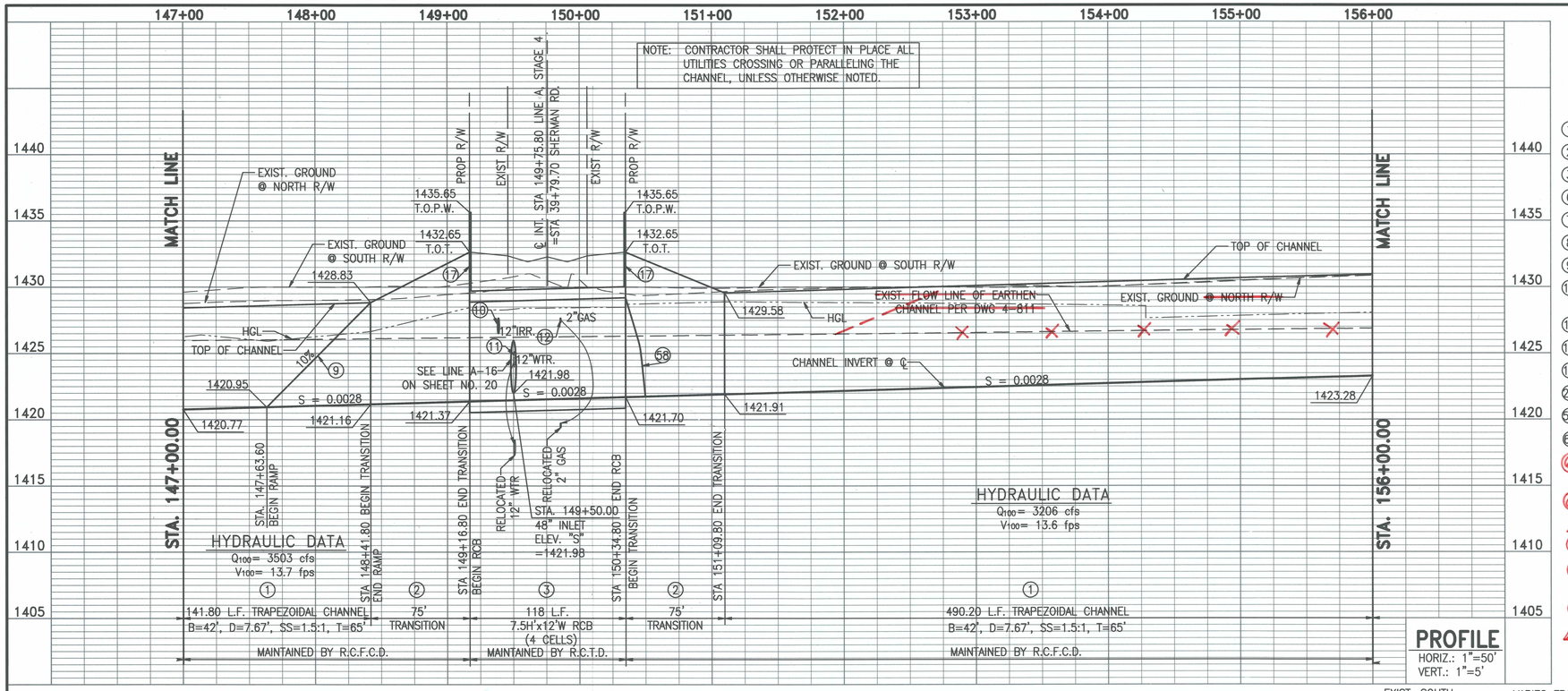
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: [signature] DATE: 12/21/07
APPROVED BY: [signature] DATE: 12-21-2007

ROMOLAND MDP LINE A - STAGE 4

STA. 139+00.00 TO STA. 147+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 4 OF 31

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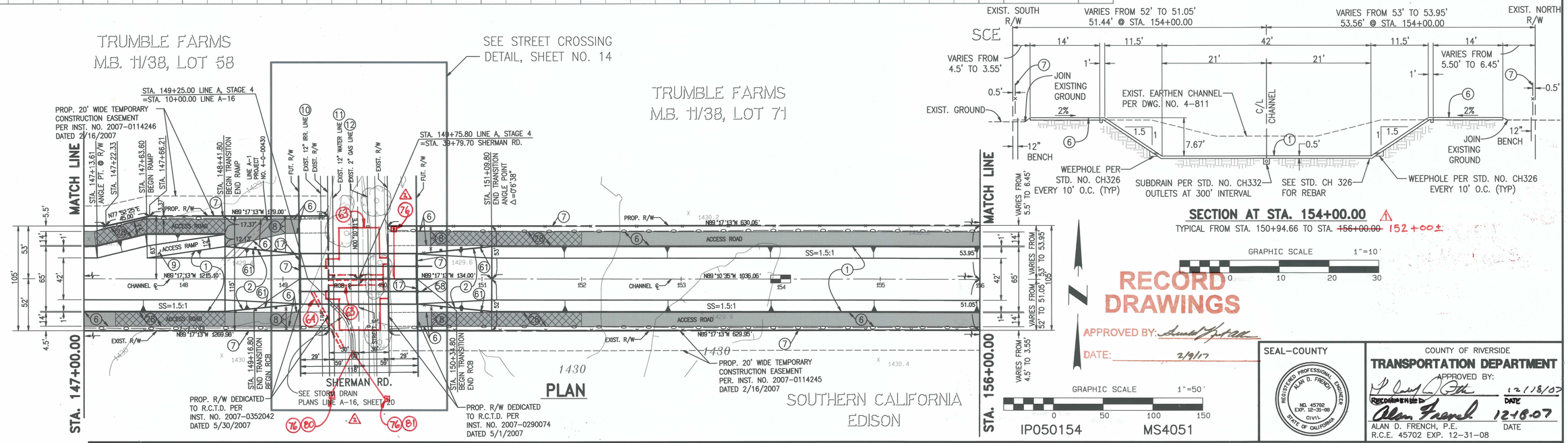


PROFILE

HORIZ.: 1"=50'
VERT.: 1"=5'

NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN).
2. CONSTRUCT TRANSITION STRUCTURE PER STD. CH329, DETAILS ON SHEET NO. 24 & 25
3. CONSTRUCT 7.5'Hx12'W RCB (4 CELLS) PER CALTRANS STD. D81
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
9. CONSTRUCT MAINTENANCE RAMP FOR TRAPEZOIDAL CHANNEL PER STD. CH330
10. EXISTING 12" IRRIGATION LINE TO BE REMOVED AND PLUGGED PER GEN. NOTE NO. 8 ON SHEET NO. 1 WITHIN R.C.T.D. RIGHT-OF-WAY BY EMWD
11. EXISTING WATER LINE TO BE RELOCATED ~~AS SHOWN,~~ (E.M.W.D. SK-1122) SEE SHEET 29
12. EXISTING 2" GAS LINE TO BE RELOCATED BY OTHERS
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23
28. CONSTRUCT 6" THICK PC CONCRETE ON 14' ACCESS ROAD AS SHOWN ON PLAN
58. CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
63. REMOVE EXISTING CONCRETE DIP CROSSING, HEADWALL AND 24 INCH CMP CULVERTS.
64. REMOVE INTERFERRING PORTION OF EXISTING 36 INCH CMP CULVERT.
76. CONSTRUCT CONCRETE DROP INLET PER RCFC STD CB110.
80. CONSTRUCT 48 L.F. OF 18" CLASS III RCP AND TIE-IN TO ROMOLAND MDP LINE A-16 AT BULKHEAD.
81. CONSTRUCT 63 L.F. OF 18" CLASS III RCP AND TIE-IN TO ROMOLAND MDP LINE A-16 AT BULKHEAD.



SECTION AT STA. 154+00.00 ⚠

TYPICAL FROM STA. 150+94.66 TO STA. ~~156+00.00~~ 152+00±

GRAPHIC SCALE 1"=10'

GRAPHIC SCALE 1"=50'

RECORD DRAWINGS

APPROVED BY: Stuart Knox

DATE: 2/9/17

SEAL—COUNTY

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: 12/18/07
RECOMMENDED Alan French 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH.(951) 686-1070
PREPARED BY: [signature] DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	[illegible]	2/9/17
2	ADDED CATCH BASINS AND CONNECTOR PIPES	[illegible]	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

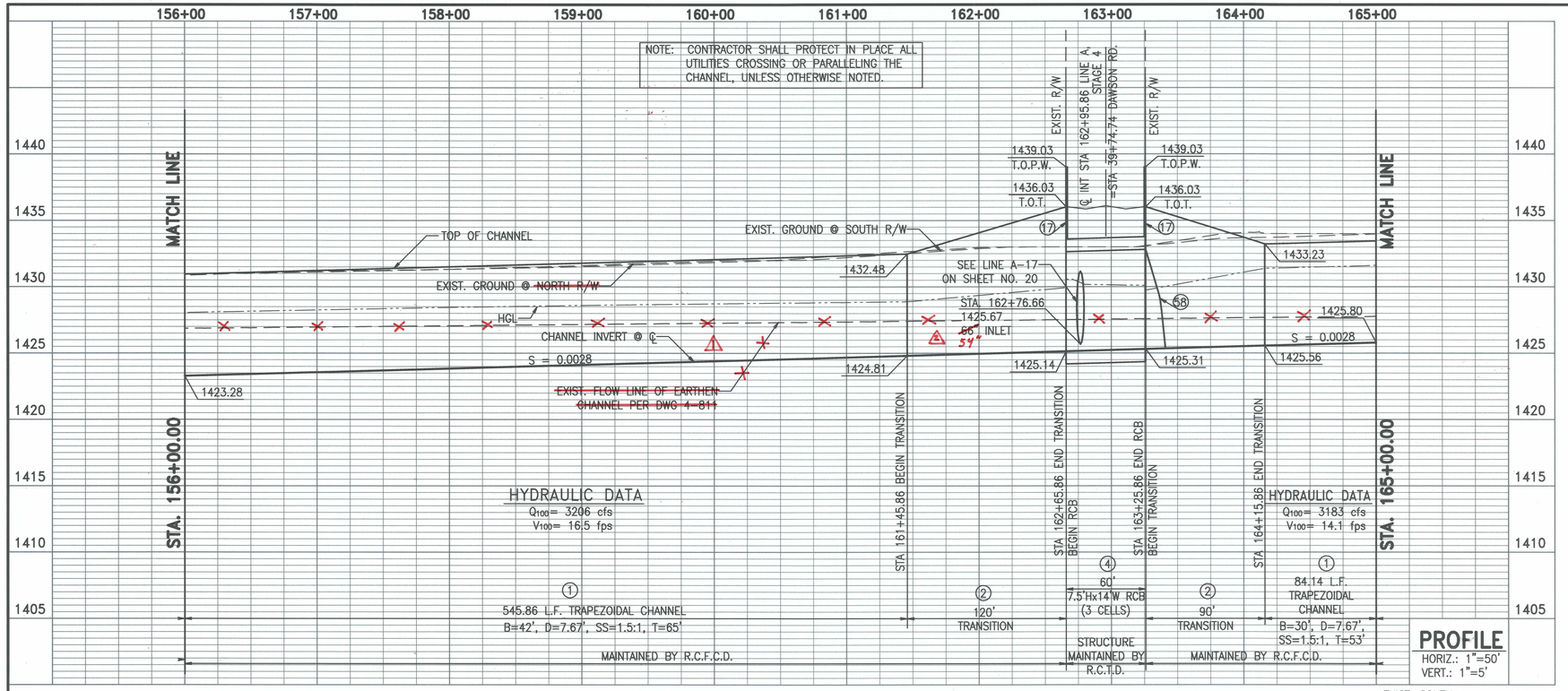
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: [signature] DATE: 12/21/07
APPROVED BY: Stuart E. Knox DATE: 12-21-2007

ROMOLAND MDP LINE A - STAGE 4

STA. 147+00.00 TO STA. 156+00.00

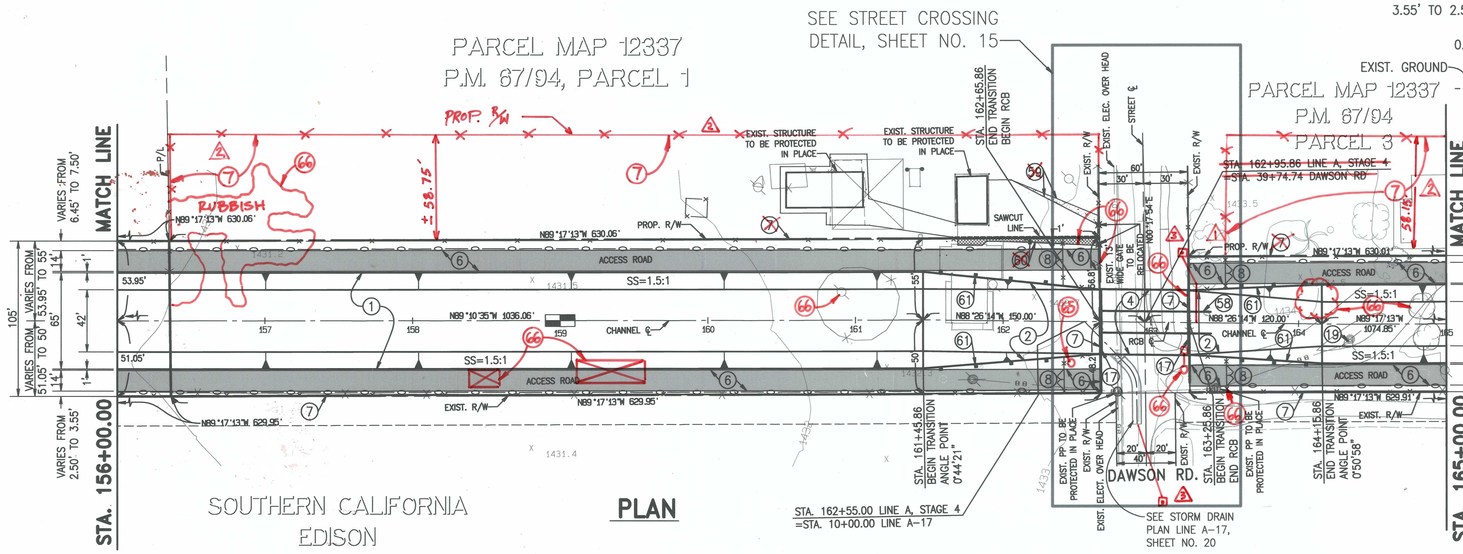
PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 5 OF 31

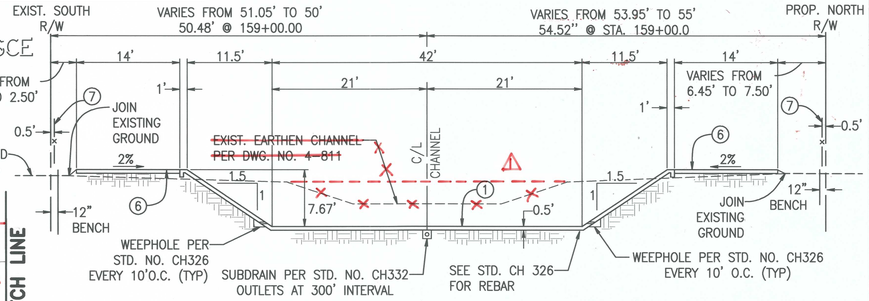
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NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN).
2. CONSTRUCT TRANSITION STRUCTURE PER STD. CH329, DETAILS ON SHEETS NO. 24 & 25
4. CONSTRUCT 7.5'Hx14'W RCB (3 CELLS) PER CALTRANS STD. D81
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23
19. EXISTING POWER POLE TO BE RELOCATED BY OTHERS
58. CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
~~59. CONSTRUCT PORTION OF DRIVEWAY AS SHOWN ON PLAN~~
~~60. SAWCUT AND REMOVE PORTION OF CONCRETE DRIVEWAY AS SHOWN~~ ⚠
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
65. REMOVE INTERFERRING PORTIONS OF ABANDONED WELL AND ENDS.
66. REMOVE ALL INTERFERRING STRUCTURES, FENCE, FLATWORK, TREES AS NEEDED.





SECTION AT STA. 159+00.00

TYPICAL FROM STA. 156+00.00 TO STA. 161+45.86

GRAPHIC SCALE 1"=10'
0 10 20 30

RECORD DRAWINGS

APPROVED BY: _____

DATE: 3/9/17

SEAL—COUNTY

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: _____ 12/18/07
RECOMMENDED _____ DATE
Alan French 12.18.07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: _____ DATE: 12-13-07

R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	[illegible]	2/9/17
2	REVISED FENCE LOCATION	[illegible]	2/9/17
3	ADDED INLETS, SEE DETAIL ON SHT. 15	[illegible]	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

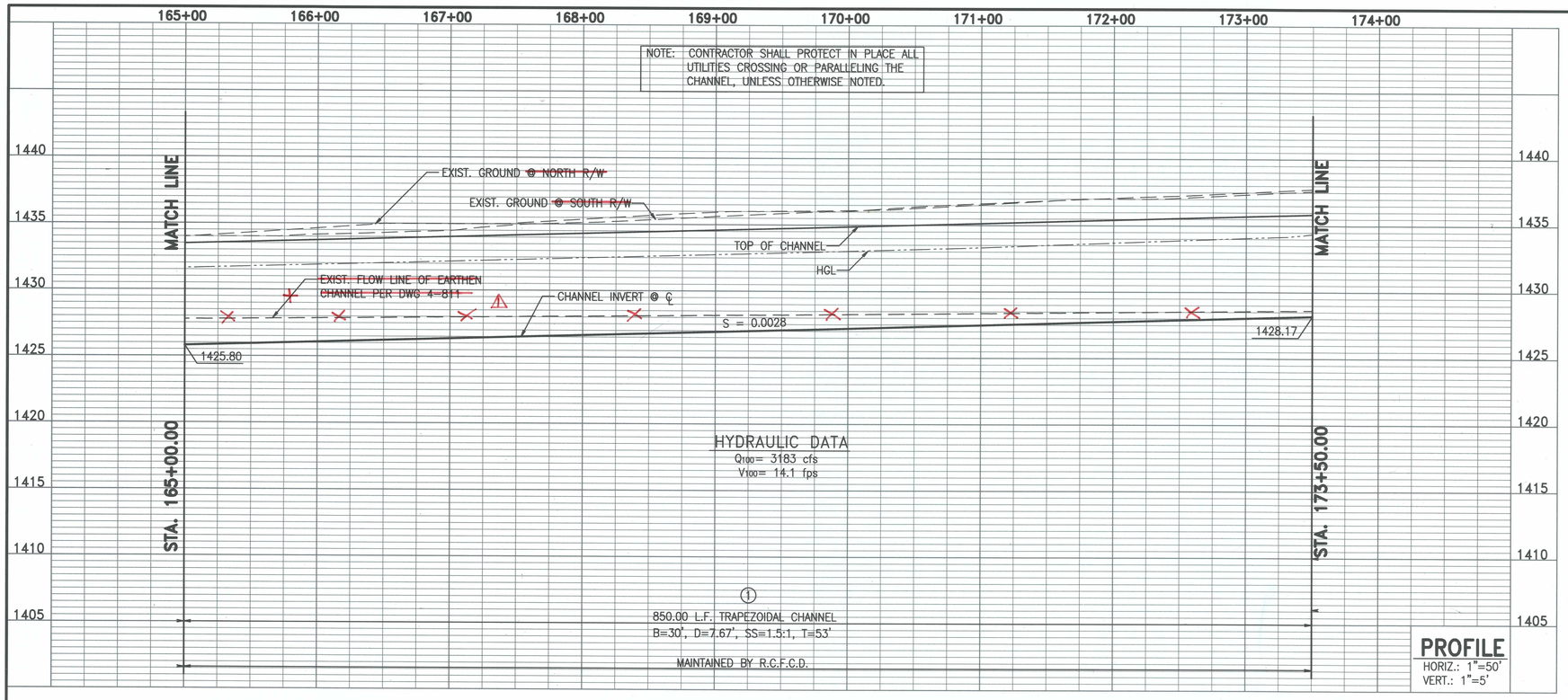
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: _____ DATE: 12/21/07
APPROVED BY: _____ DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
STA. 156+00.00 TO STA. 165+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 6 OF 31

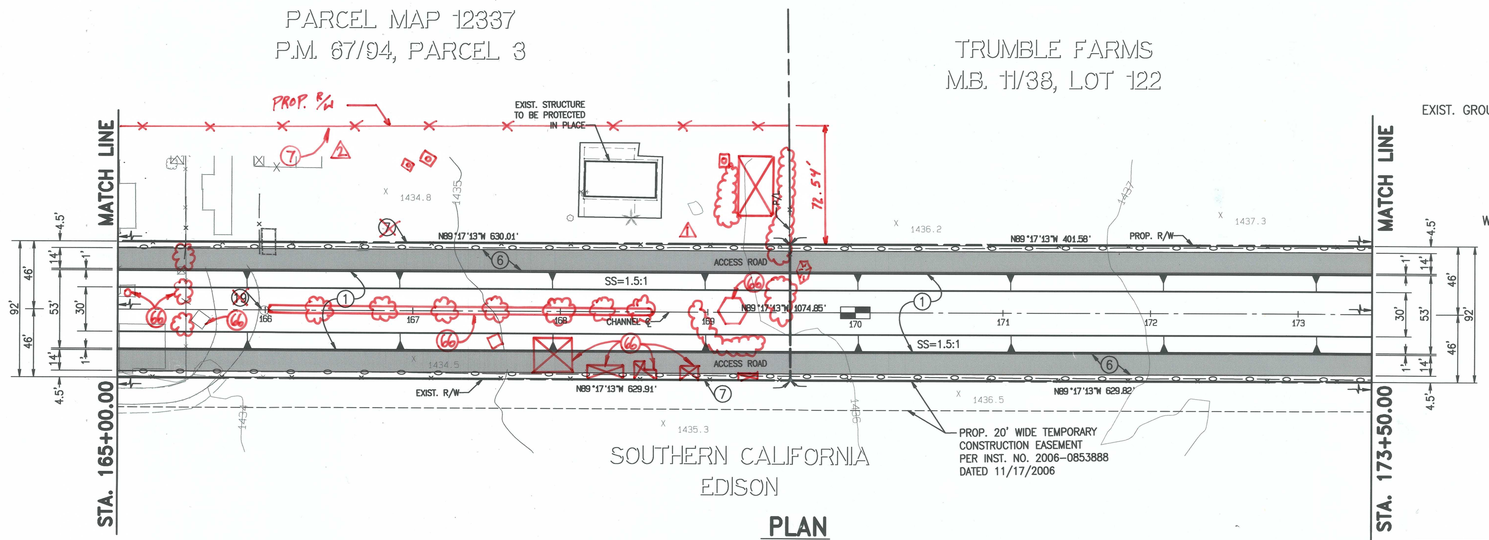
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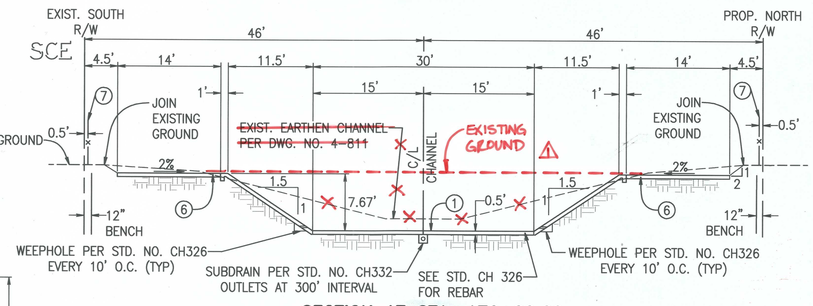
C:\12003\03-0339\DWG&PRO\03339line4-Master.pro12/11/2007



NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN)
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
~~19~~ ~~EXISTING POWER POLE TO BE RELOCATED BY OTHERS~~ ⚠
66 REMOVE ALL INTERFERING STRUCTURES, FENCE, FLATWORK, TREES AS NEEDED.





SECTION AT STA. 170+00.00

TYPICAL FROM STA. 165+00.00 TO STA. 173+50.00

GRAPHIC SCALE 1"=10'
0 10 20 30

RECORD DRAWINGS
APPROVED BY: Stuart E. McKibbin
DATE: 2/9/17

IP050154 MS4051

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISC, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	MMa	2/9/17
2	REVISED FENCE LOCATION	MMa	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

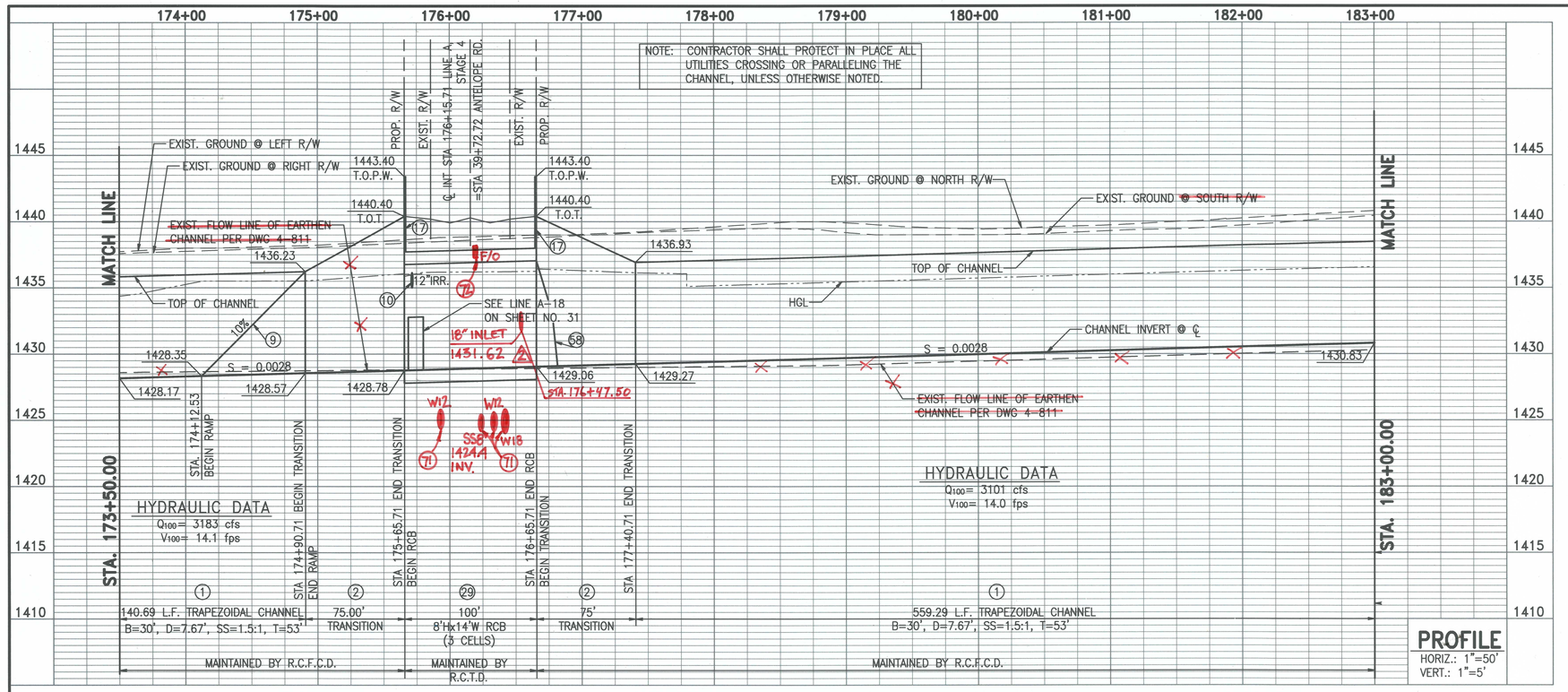
ROMOLAND MDP LINE A - STAGE 4

STA. 165+00.00 TO STA. 173+50.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 7 OF 31

8

G:\2003\03-0338\DWG&PRO\0338line4-Master.pro12/11/2007

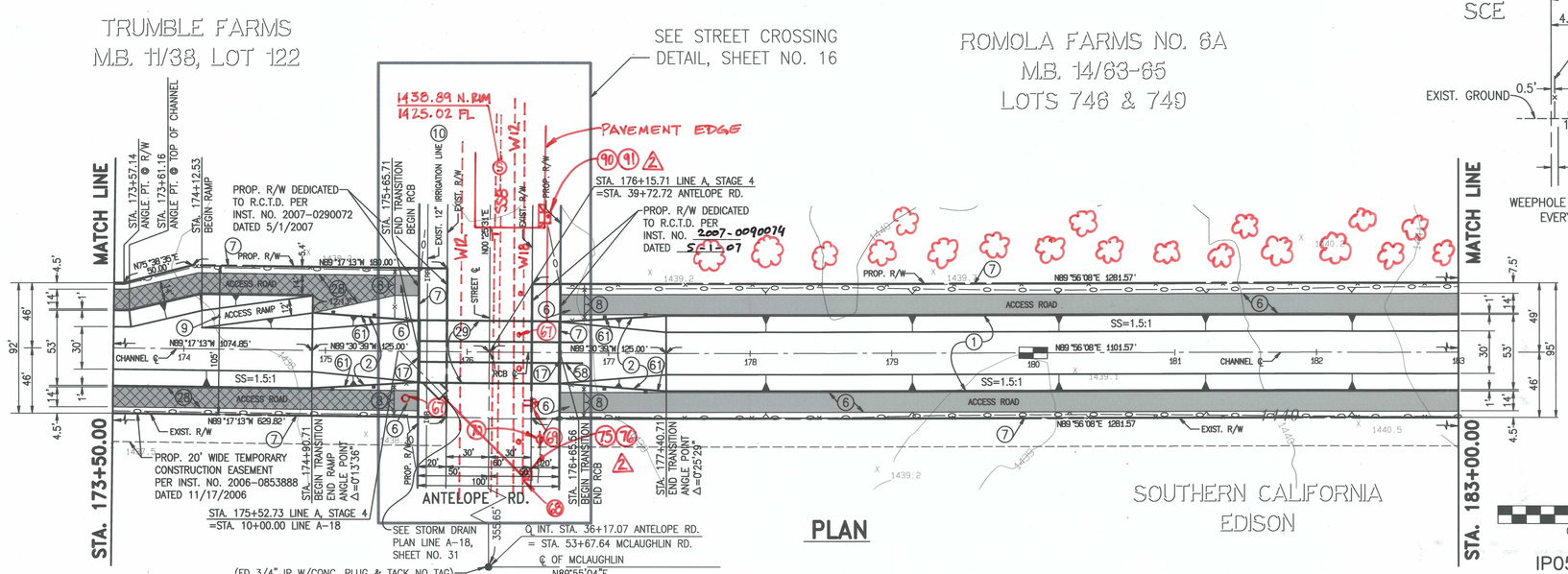


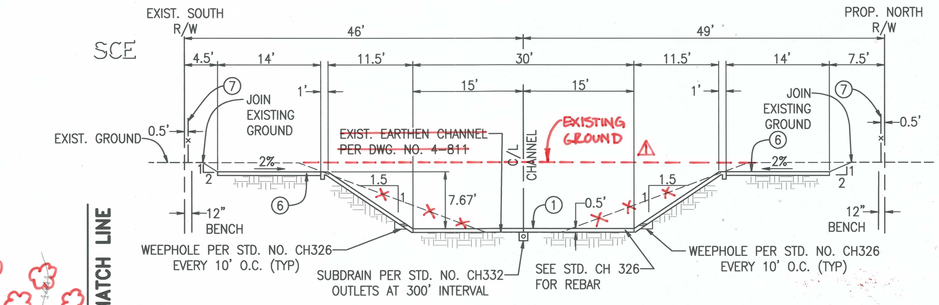
PROFILE

HORIZ.: 1"=50'
VERT.: 1"=5'

NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN)
2. CONSTRUCT TRANSITION STRUCTURE PER STD. CH329, DETAIL ON SHEETS NO. 24 & 25
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
9. CONSTRUCT MAINTENANCE RAMP FOR TRAPEZOIDAL CHANNEL PER STD. CH330
10. EXISTING 12" IRRIGATION LINE TO BE REMOVED AND PLUGGED WITHIN R.C.T.D. RIGHT OF WAY
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23
28. CONSTRUCT 6" THICK PC CONCRETE ON 14' ACCESS ROAD AS SHOWN ON PLAN
29. CONSTRUCT 8'Hx14'W RCB (3 CELLS) PER CALTRANS STD. D81
58. CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
67. REMOVE INTERFERRING PORTIONS OF MARKERS.
68. REMOVE INTERFERRING PORTION OF 18" PVC CULVERT AS NEEDED.
71. PROTECT EXISTING EMWD VALVES. ⚠
72. PROTECT EXISTING POWER POLE IN PLACE.
73. PROTECT EMWD FACILITIES W12, W12, W18, SSB IN PLACE.
74. EXISTING TELEPHONE LINE TO BE RELOCATED BY OTHERS.
75. CONSTRUCT 90 L.F. OF 18" CLASS IV RCP AND TIE-IN TO ROMOLAND MDP LINE A-18 AT BULKHEAD.
76. CONSTRUCT CONCRETE DROP INLET PER STD CB110.
90. CONSTRUCT 68.7 L.F. OF 18" CLASS IV RCP AND JUNCTION STRUCTURE NO.3 PER STD JS228 ; A=90°, ELEV "S"=1431.62'
91. CONSTRUCT CATCH BASIN NO.1 PER STD CB100 V=4', W=7'





SECTION AT STA. 180+00.00

TYPICAL FROM STA. 177+40.71 TO STA. 183+00.00

GRAPHIC SCALE 1"=10'

GRAPHIC SCALE 1"=50'

IP050154 MS4051

RECORD DRAWINGS

APPROVED BY: [signature]

DATE: 2/9/17

SEAL-COUNTY

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
[signature] 12/18/07
RECOMMENDED DATE
Alan French 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: [signature] DATE: 12-18-07

R.C.E. NO. C44762 EXP. DATE 3-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.

TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
⚠1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	MR	2/9/17
⚠2	ADDED CATCH BASINS AND CONNECTOR PIPES	MR	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

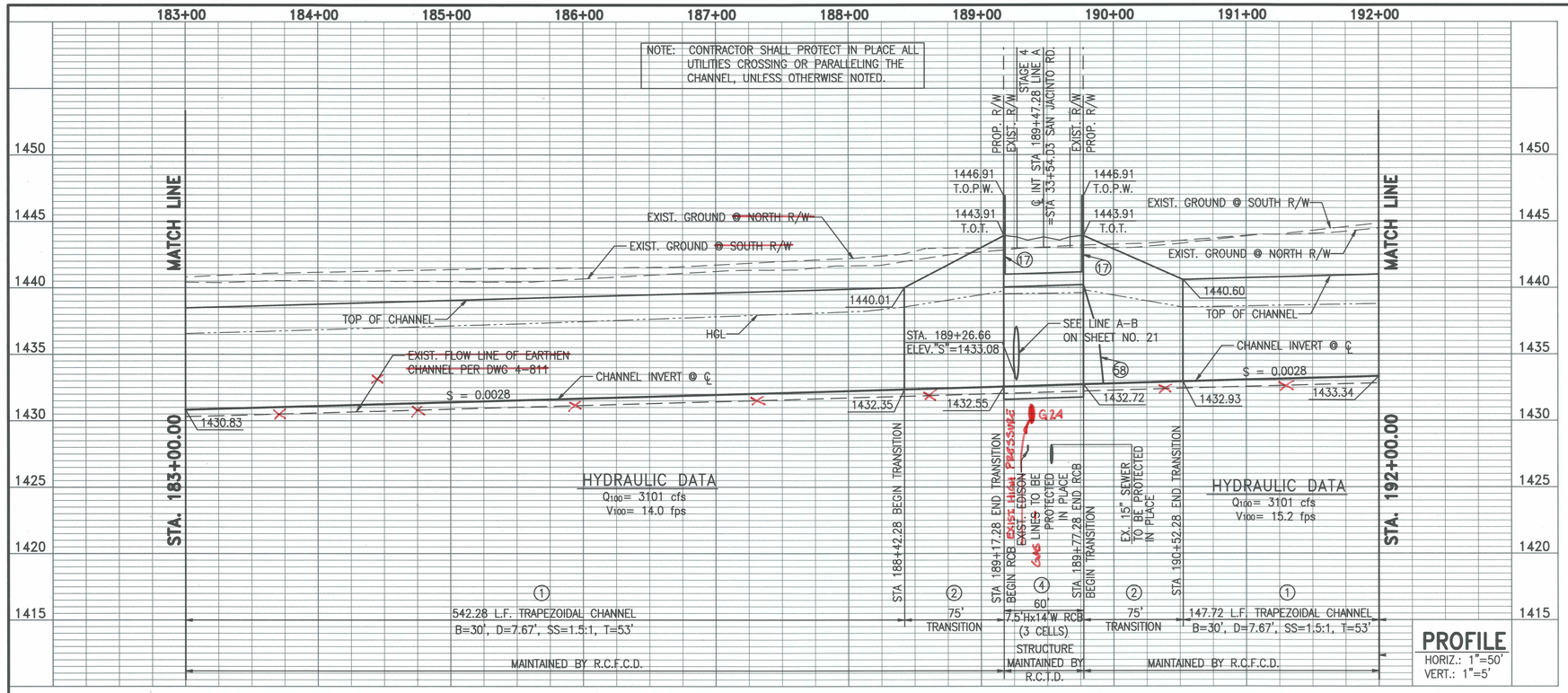
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: [signature] DATE: 12/24/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP LINE A - STAGE 4
STA. 17+50.00 TO STA. 183+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 8 OF 31

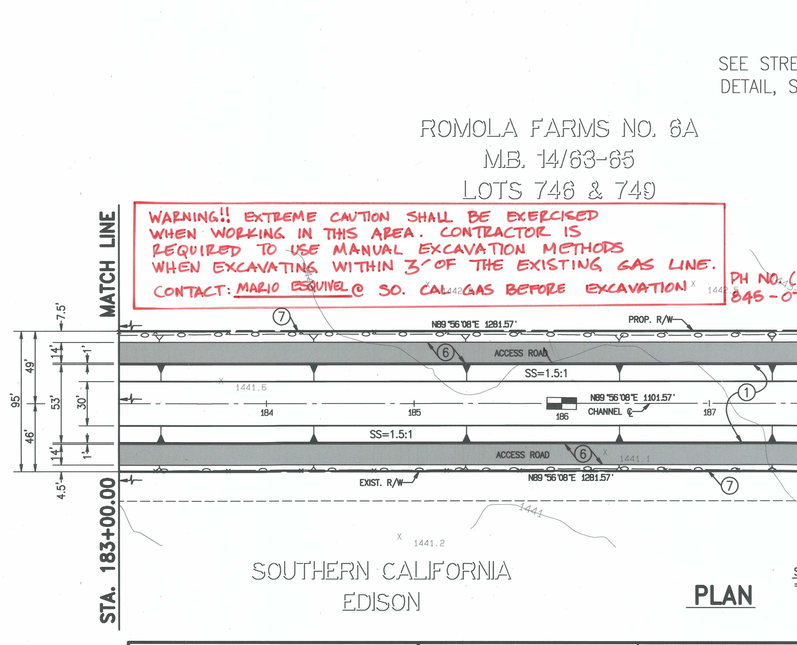
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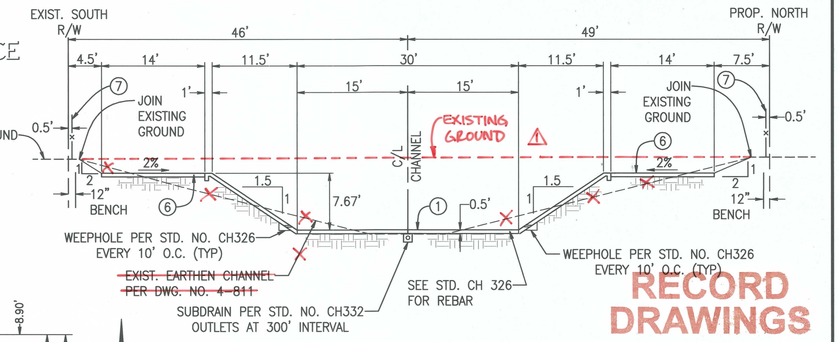
9



NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN).
2. CONSTRUCT TRANSITION STRUCTURE PER STD. CH329, DETAILS ON SHEETS NO. 24 & 25
4. CONSTRUCT 7.5'Hx14'W RCB (3 CELLS) PER CALTRANS STD. D81
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23
58. CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47 ⚠1
73. PROTECT EXISTING HIGH PRESSURE 24" GAS LINE.
75. CONSTRUCT 41 L.F. OF 18" CLASS IV RCP AND TIE-IN TO SAN JACINTO RD STORM DRAIN AT BULKHEAD.
76. CONSTRUCT CONCRETE DROP INLET PER STD CB-110





RECORD DRAWINGS

SECTION AT STA. 186+00.00 APPROVED BY: DATE: 2/9/07

TYPICAL FROM STA. 183+00.00 TO STA. 188+42.28

GRAPHIC SCALE 1"=10'

GRAPHIC SCALE 1"=50'

IP050154 MS4051

SEAL-COUNTY

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: 12/18/07 DATE
RECOMMENDED Alan French 12-18-07 DATE
ALAN D. FRENCH, P.E.
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E. OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
⚠1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS		2/9/07
⚠2	ADDED CATCH BASIN AND CONNECTOR PIPE		2/9/07

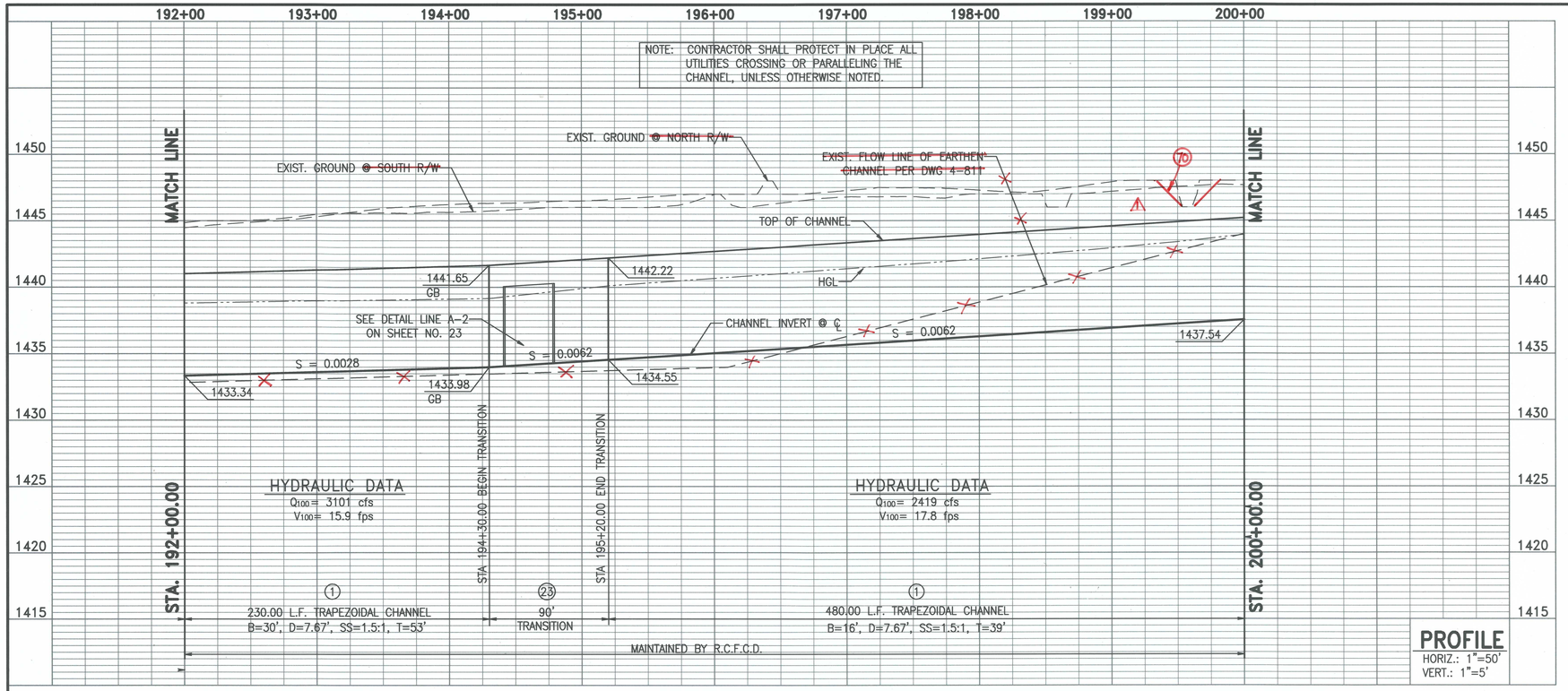
DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/21/07
APPROVED BY: DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
STA. 183+00.00 TO STA. 192+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 9 OF 31

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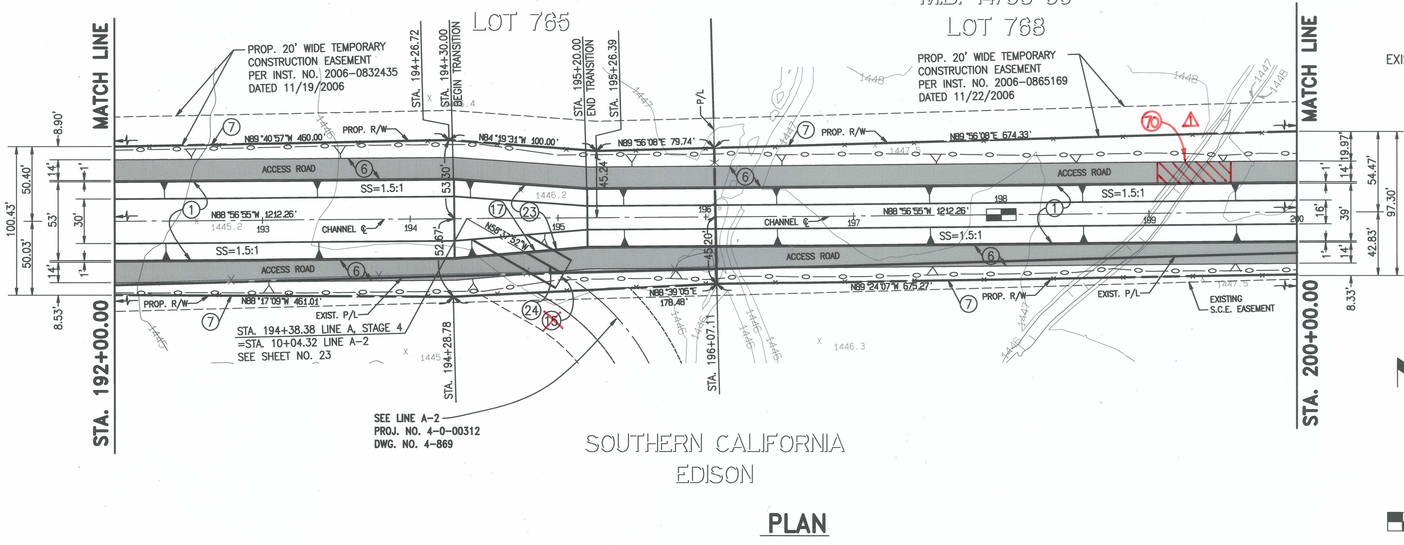


PROFILE

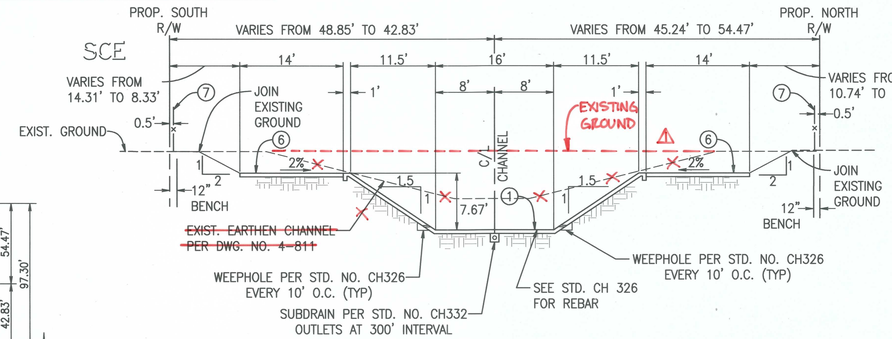
HORIZ.: 1"=50'
VERT.: 1"=5'

NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN).
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
~~15. INSTALL CONCRETE BULKHEAD PER STD. M816 AND PER DETAIL ON SHEET NO. 26~~
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, PER DETAILS ON SHEETS NO. 23 AND 26
23. CONSTRUCT JUNCTION STRUCTURE PER DETAIL ON SHEET 23
24. CONSTRUCT 6'H x 10'W RCB (2 CELLS) PER CALTRANS STD. D81
70. CONSTRUCT 6" THICK CONCRETE DRAINAGE APRON FOR ACCESS ROAD PER STD CH333 BETWEEN STA 199+00 TO STA 199+70.



PLAN



SECTION AT STA. 198+00.00

TYPICAL FROM STA. 195+20.00 TO STA. 200+00.00

GRAPHIC SCALE 1"=10'
0 10 20 30

GRAPHIC SCALE 1"=50'
0 50 100 150

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

IP050154 MS4051

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/14/07
APPROVED BY: DATE: 12-21-2007

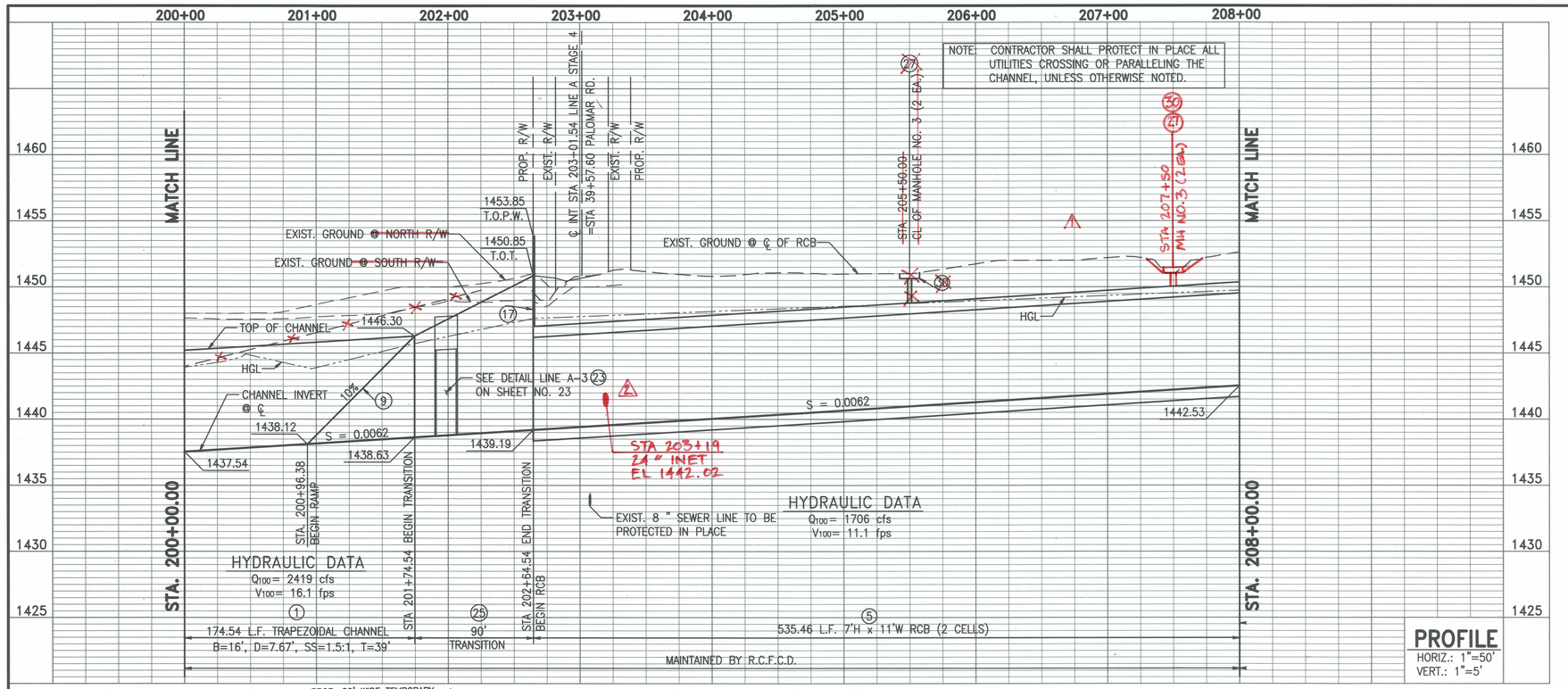
ROMOLAND MDP LINE A - STAGE 4

STA. 192+00.00 TO STA. 200+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 10 OF 31

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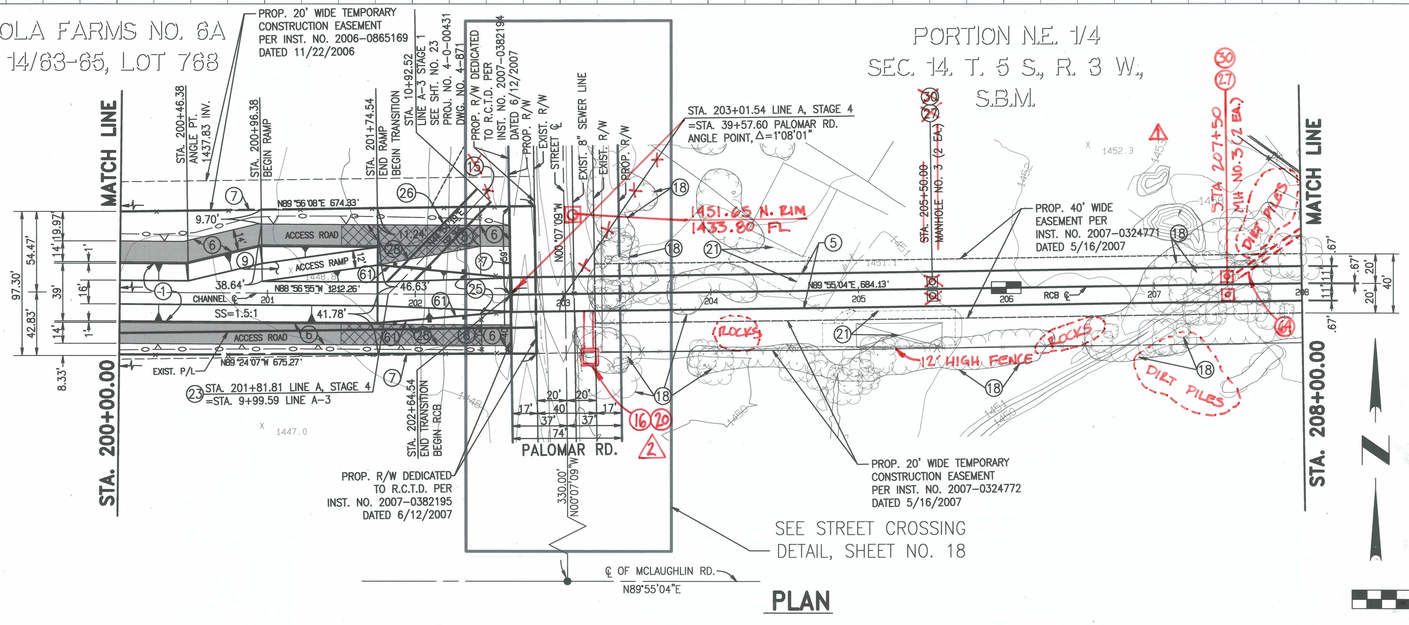
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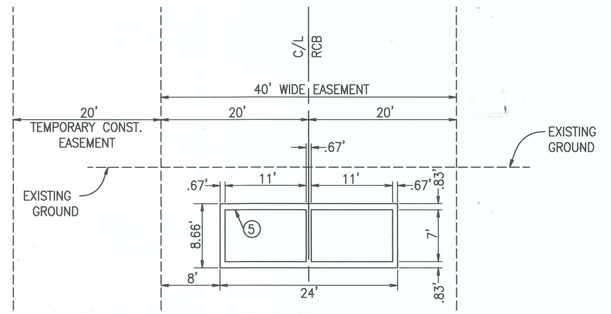
PROFILE
HORIZ.: 1"=50'
VERT.: 1"=5'

NOTES

1. CONSTRUCT TRAPEZOIDAL CHANNEL PER STD. CH326 ("B", "D" & "T" PER PLAN).
5. CONSTRUCT 7.0'Hx11'W RCB (2 CELLS) PER CALTRANS STD. D81
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
9. CONSTRUCT MAINTENANCE RAMP FOR TRAPEZOIDAL CHANNEL PER STD. CH330
15. ~~INSTALL CONCRETE BULKHEAD PER STD. M816 AND DETAIL ON SHEET NO. 26~~
17. CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, PER DETAILS ON SHEETS NO. 23 AND 26
18. REMOVE EXISTING TREES WITHIN R.C.F.C.D. & R.C.T.D. RIGHT-OF-WAY
21. REMOVE EXISTING ~~STRUCTURES~~ FENCE WITHIN R.C.F.C.D. RIGHT-OF- WAY/EASEMENT
23. CONSTRUCT JUNCTION STRUCTURE PER DETAIL ON SHEET 23
25. CONSTRUCT TRANSITION STRUCTURE PER DETAILS ON SHEET 23 & 25
26. CONSTRUCT 6.0'Hx12.0'W RCB (SINGLE CELL) PER CALTRANS STD. ~~D81~~ D80
27. ~~CONSTRUCT MANHOLE NO. 3 PER R.C.F.C.D. STD. DWG. MH253~~
28. CONSTRUCT 6" THICK PC CONCRETE ON 14' ACCESS ROAD AS SHOWN ON PLAN
30. CONSTRUCT 7' X 7' X 6" CONCRETE APRON
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47 ⚠
64. REMOVE INTERFERRING PORTION OF EXISTING 36 INCH CMP CULVERTS.
27. CONSTRUCT MANHOLE NO. 3 WITH 3' DIAMETE SHAFT AND GRATED INLET PER R.C.F.C.D. STD. DWG. MH253 ~~SHALL BE PER CALTRANS STD. D77B TYPE 36 R.~~
16. CONSTRUCT CONC. DROP INLET PER R.C.F.C. & W.C.D. STD DWG. CB110.
20. INSTALL 24" RCP (CLASS - IV)



PLAN



SECTION AT STA. 206+00.00
TYPICAL FROM STA. 203+21.54 TO STA. 208+00.00

GRAPHIC SCALE 1"=10'
0 10 20 30

RECORD DRAWINGS
APPROVED
DATE 2/9/17

IP050154 MS4051

G:\2003\03-0338\DWG&PRO\03338lines&-Master.pro12/11/2007

12

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 2-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

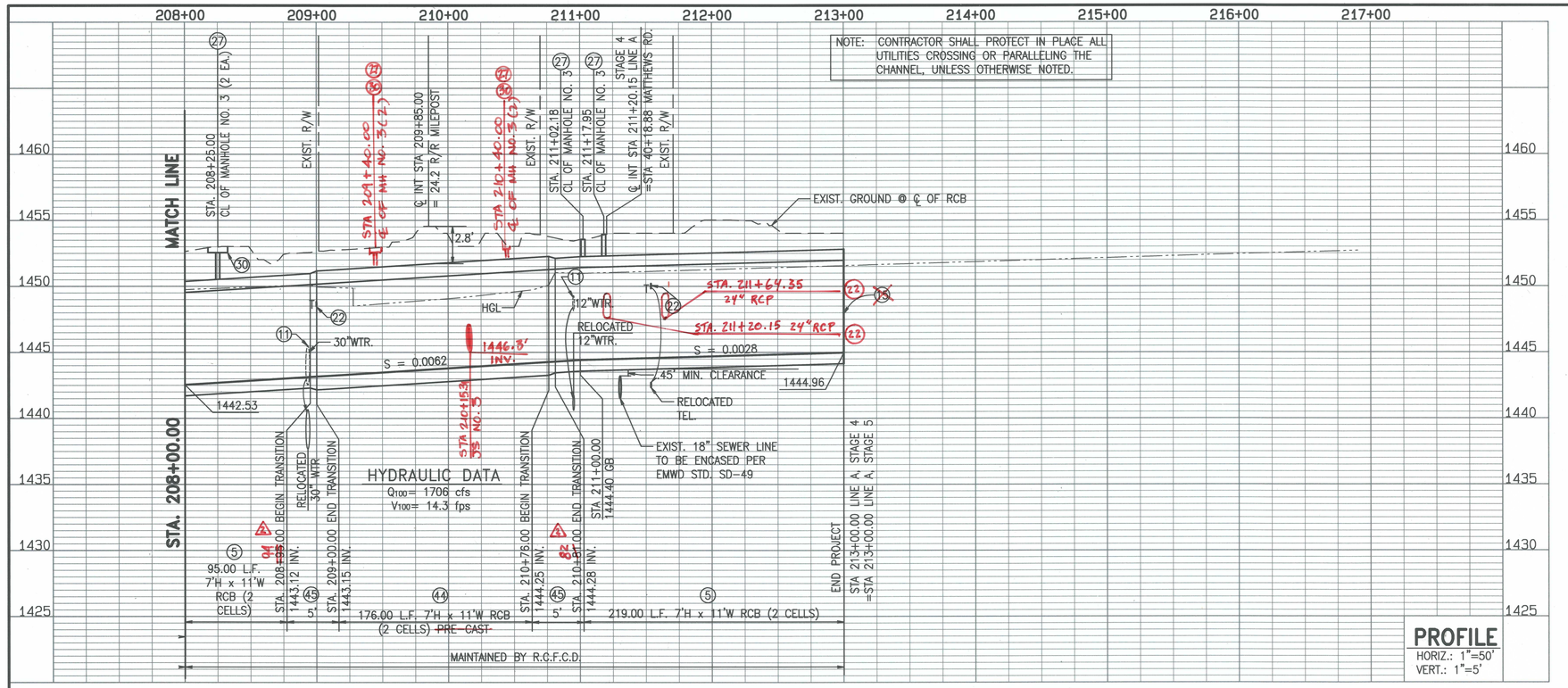
REF.	DESCRIPTION	APPR.	DATE
⚠	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS		2/9/17
⚠	ADDED CATCH BASIN AND CONNECTOR PIPE		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07
APPROVED BY: DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
STA. 200+00.00 TO STA. 208+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 11 OF 31



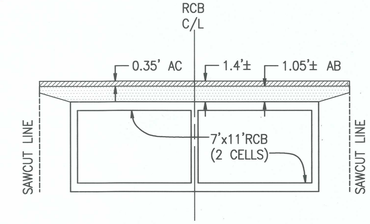
NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES CROSSING OR PARALLELING THE CHANNEL, UNLESS OTHERWISE NOTED.

PROFILE

HORIZ.: 1"=50'
VERT.: 1"=5'

NOTES

(5) CONSTRUCT 7.0'Hx11'W RCB (2 CELLS) PER CALTRANS STD. D81
(11) EXISTING WATER LINES TO BE RELOCATED, ~~PER EMWD DWG. D-1316 AND D-14756~~ BY EMWD. ~~SEE SHEETS NO. 29 AND 30 PER REFERENCE (E.M.W.D. SK-1120) AND (E.M.W.D. SK-1126)~~
~~(15) INSTALL CONCRETE BULKHEAD PER STD. M816 AND DETAIL ON SHEET NO. 26~~
(18) REMOVE EXISTING TREES WITHIN R.C.F.C.D. & R.C.T.D. RIGHT-OF-WAY
(22) EXISTING TELEPHONE LINE TO BE RELOCATED BY OTHERS
(27) CONSTRUCT MANHOLE NO. 3 PER R.C.F.C.D. STD. DWG. MH253
(30) CONSTRUCT 7' X 7' X 6" CONCRETE APRON W/ #4 @ 18" EACH WAY CAST-IN-PLACE
(44) CONSTRUCT 7.0'Hx11'W (2 CELLS) ~~PRE-CAST~~ RCB PER DETAIL ON SHEET 28A.
(45) TRANSITION FROM 7.0'Hx11'W RCB (2 CELLS) TO 7.0'Hx11'W ~~PRE-CAST~~ RCB WITHIN R/R R/W.
(10) CONSTRUCT CONCRETE DROP INLET PER RCFC STD CB110. SEE SHEET 20A FOR DETAILS. 24" RCP, CLASS IV, ELEV 'S' = 1445.30'.
(11) CONSTRUCT JUNCTION NO.3 PER RCFC STD JS228.
(12) GRADE TO DRAIN AWAY FROM RAILROAD TRACKS.



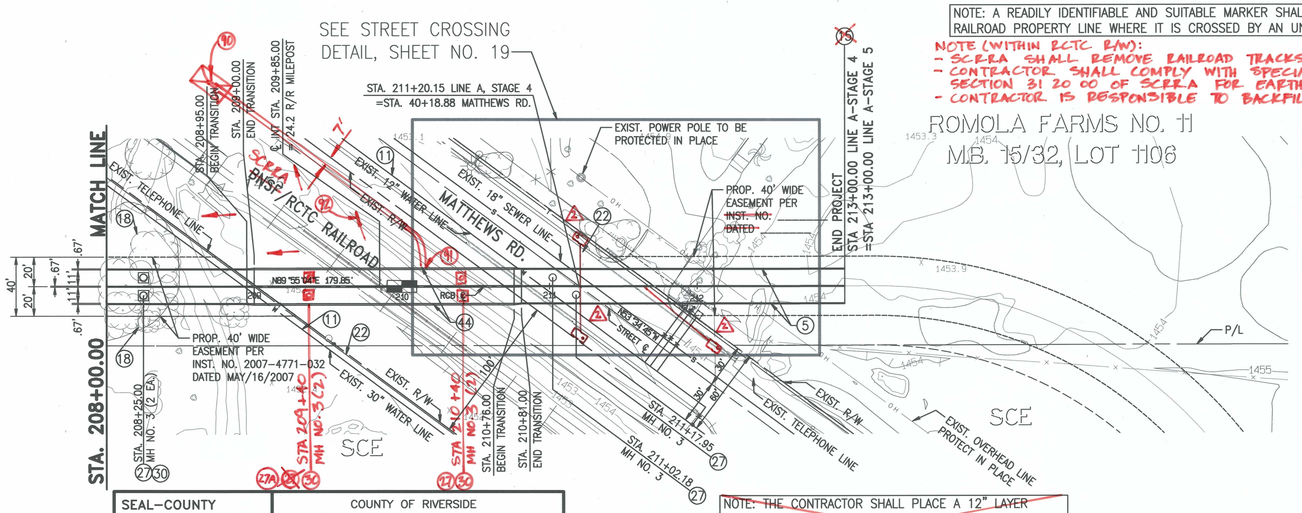
MATTHEWS ROAD REMOVE AND REPLACE SECTION

N.T.S.

(27A) CONSTRUCT MANHOLE NO.3 WITH 3' DIAMETER SHAFT AND GRATED INLET PER R.C.F.C.D STD. DWG MH253

NOTE: A READILY IDENTIFIABLE AND SUITABLE MARKER SHALL BE PLACED AT EACH RAILROAD PROPERTY LINE WHERE IT IS CROSSED BY AN UNDERGROUND IMPROVEMENT

NOTE (WITHIN RCTC R/W):
- SCRRA SHALL REMOVE RAILROAD TRACKS. CONTRACTOR SHALL COORDINATE WITH SCRRA.
- CONTRACTOR SHALL COMPLY WITH SPECIAL PROVISIONS OF THIS PROJECT AND SECTION 31 20 00 OF SCRRA FOR EARTHWORK REQUIREMENTS.
- CONTRACTOR IS RESPONSIBLE TO BACKFILL UP TO SUBBALLAST.



NOTE: ~~THE CONTRACTOR SHALL PLACE A 12" LAYER OF COMPACTED GRANULAR MATERIAL ON TOP OF A LAYER OF GEOTEXTILE FABRIC AT THE BOTTOM OF THE PRECAST SECTION BOX, PER BNSF REQUIREMENTS~~

SEE ~~BNSF~~ SCRRA AND RCTC NOTES ~~NO. 6 ON~~ SHEET 1A

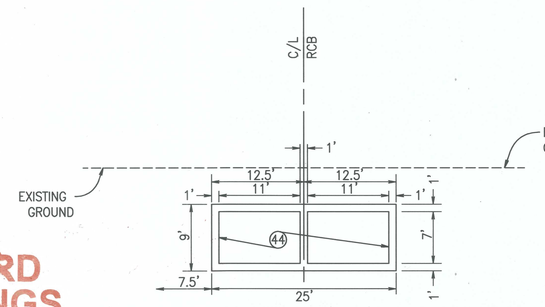
NOTE: THE CONTRACTOR SHALL PLAN, SCHEDULE AND CONDUCT ALL WORK ACTIVITIES SO AS NOT TO INTERFERE WITH THE MOVEMENT OF ANY TRAINS ON ~~BNSF~~ SCRRA PROPERTY

PLAN

GRAPHIC SCALE 1"=50'
0 50 100 150

RECORD DRAWINGS

APPROVED BY: Stuart Hazlett
DATE: 2/9/17



SECTION AT STA. 210+00.00

TYPICAL FROM STA. 209+00.00 TO STA. 210+76.00 BNSF/RCTC RIGHT OF WAY

GRAPHIC SCALE 1"=10'
0 10 20 30

SEAL-COUNTY

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: 12/19/07 DATE
RECOMMENDED: Alan French 12-18-07 DATE
ALAN D. FRENCH, P.E.
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.


TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E. OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS.	[illegible]	2/9/17
2	ADDED CATCH BASIN AND CONNECTOR PIPE.	[illegible]	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/21/07
APPROVED BY: Stuart E. Hazlett DATE: 12-21-2007

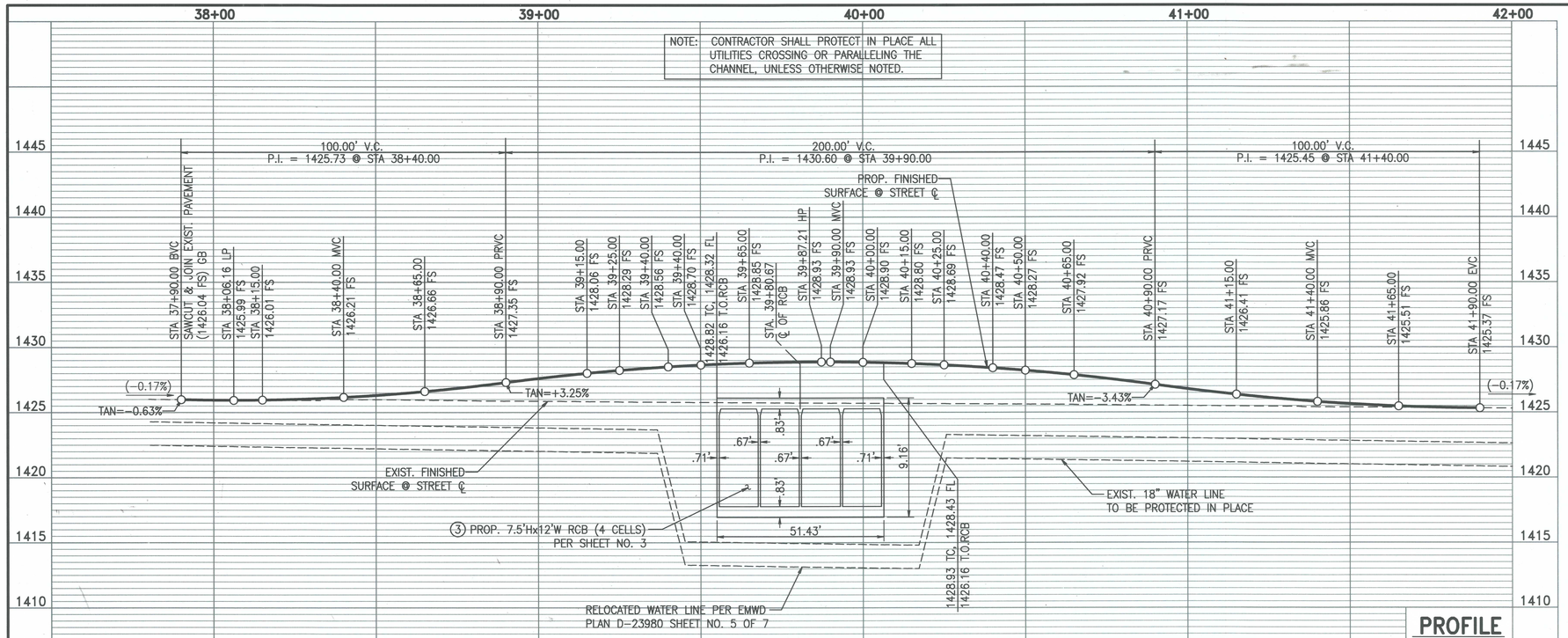
IP050154 MS4051

ROMOLAND MDP
LINE A - STAGE 4
STA. 208+00.00 TO STA. 213+00.00

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 12 OF 31

13

G:\2003\03-0338\DWG&PRO\03338mek-Master.pro12/11/2007

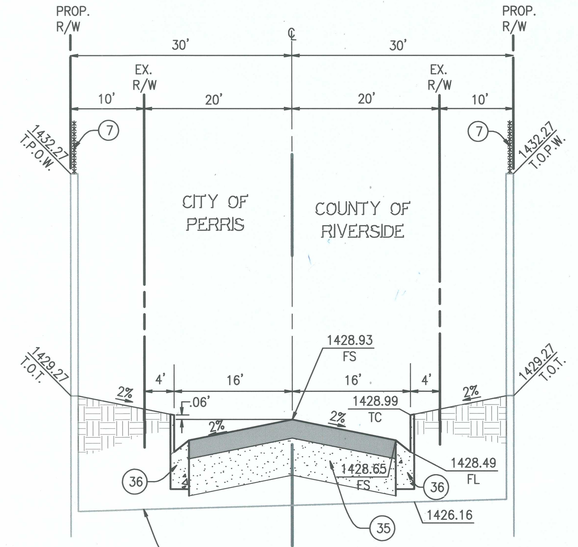


PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'

NOTES

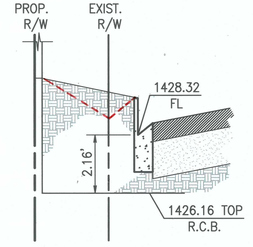
③ CONSTRUCT 7.5'Hx12'W RCB (4 CELLS)
⑥ INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
⑦ INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
⑧ INSTALL 14' DOUBLE DRIVE GATE PER STD. M801
⑩ EXISTING IRRIGATION LINE TO BE REMOVED AND PLUGGED WITHIN R.C.F.C.D. RIGHT-OF-WAY
⑯ CONSTRUCT CONCRETE DRIVEWAY PER R.C.T.D. STD. 207 (W=PER PLAN)
㉟ CONSTRUCT 0.25' AC OVER 0.50 AB CLASS 2
㊱ CONSTRUCT CONCRETE TYPE A-6 CURB & GUTTER PER R.C.T.D. STD. 200
㊸ REMOVE & REPLACE EXISTING STREET IMPROVEMENTS AS NECESSARY (SEE PLAN VIEW)
㊽ CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
㊶ INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47



TRUMBLE ROAD

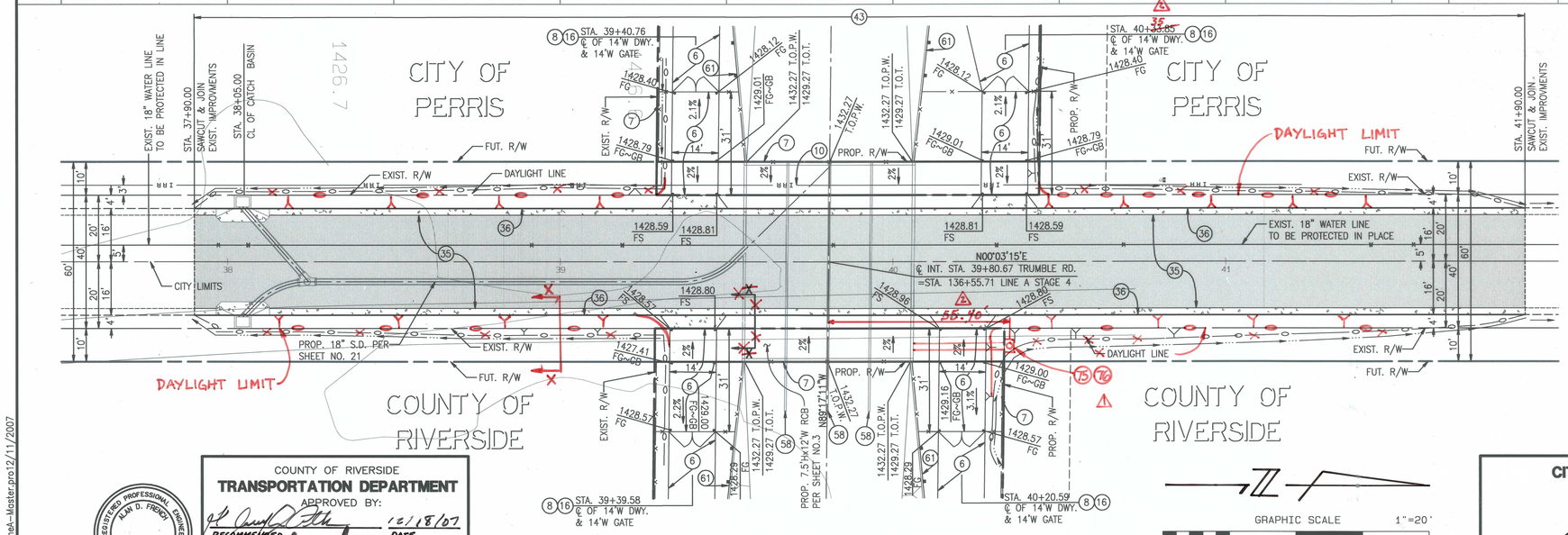
SECTION @ STA. 39+80.67
HORIZ.: 1"=10'
VERT.: 1"=1'

⚠ 75 INSTALL 26 LF OF 24" RCP WITH R.C.F.C. STD JS NO.3 ELEV 'S' = ~~1418.~~ 1420.43.
76 CONSTRUCT CONCRETE DROP INLET PER R.C.F.C. STD CB110.



SECTION X-X

N.T.S.



TRUMBLE ROAD

SEE SHEET 3

GRAPHIC SCALE 1"=20'
0 20 40 60

RECORD DRAWINGS

APPROVED BY: Stuart E. McKibbin
DATE: 2/9/17

CITY OF PERRIS
HABIB M. MOTLAGH DATE 12-21-07

IP050154 MS4051

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
RECOMMENDED 12/18/07 DATE
ALAN D. FRENCH, P.E. 12-18-07 DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45782 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER SCOTT R. WILDERMUTH NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
⚠	ADDED NOTES AND MISCELLANEOUS PLANIMETRICS	MM	2/9/17
⚠	REVISED NOTES	MM	2/9/17

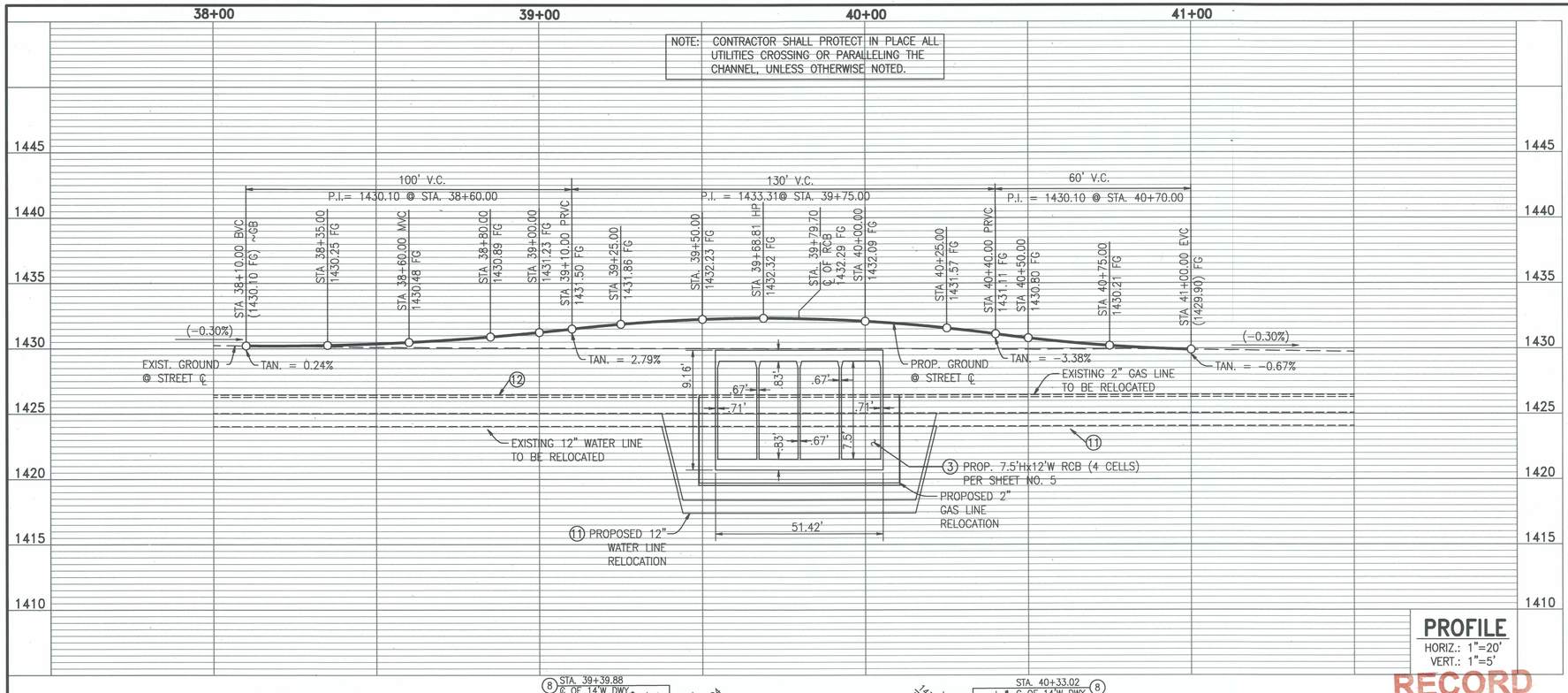
DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/24/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
TRUMBLE ROAD CROSSING DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 13 OF 31

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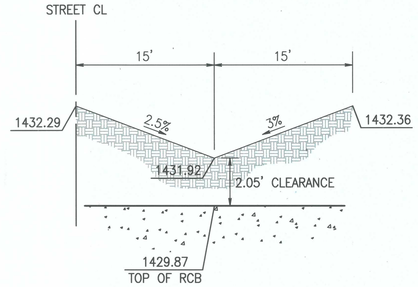


PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'

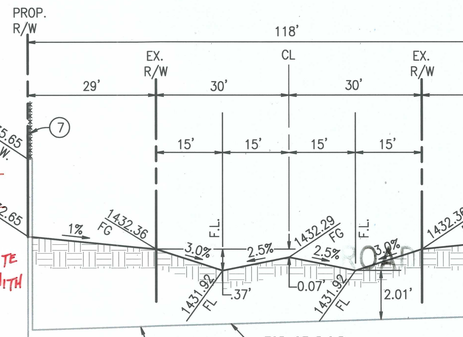
NOTES

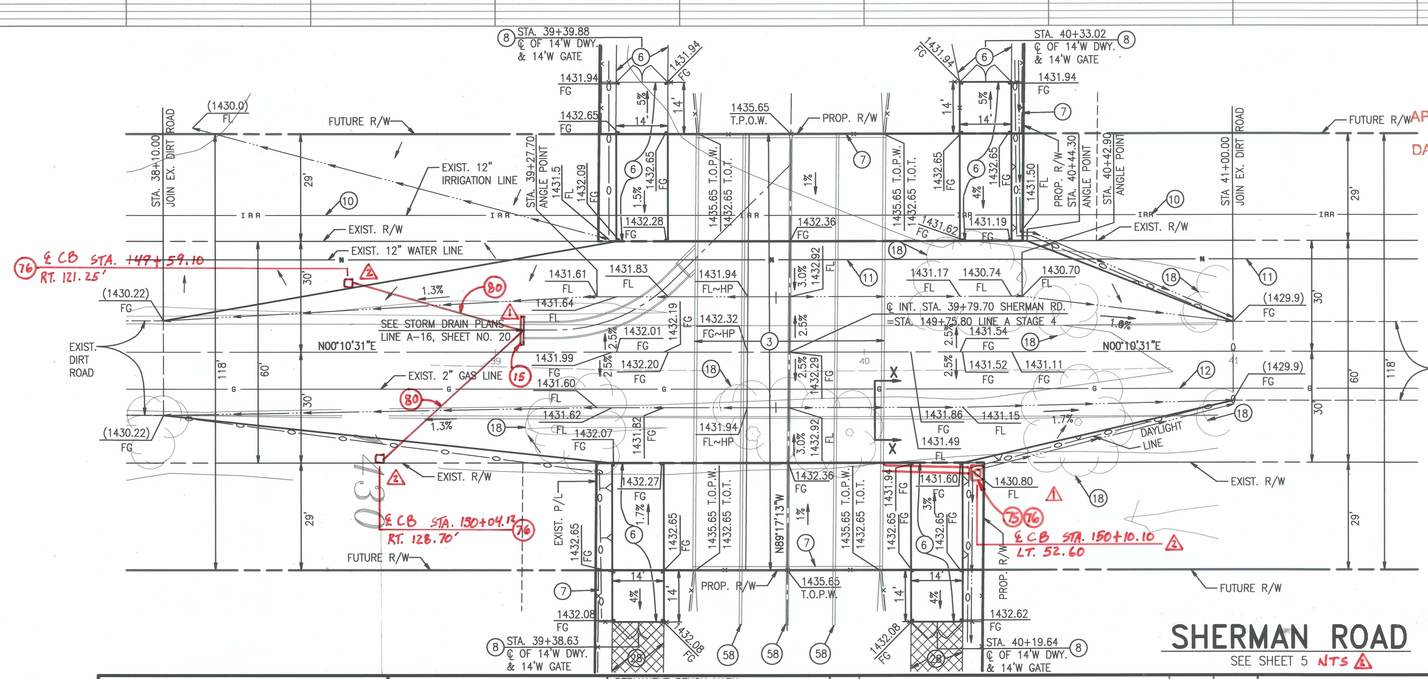
(3) CONSTRUCT 7.5'Hx12'W RCB (4 CELLS) PER CALTRANS STD. D81
(6) INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
(7) INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
(8) INSTALL 14' DOUBLE DRIVE GATE PER STD. M801
(10) EXISTING 12" IRRIGATION LINE TO BE REMOVED AND PLUGGED WITHIN R.C.F.C.D. RIGHT-OF-WAY
(11) EXISTING WATER LINE TO BE RELOCATED, ~~PER~~ BY EMWD ~~DWG. D-2230, SEE SHEET NO. 29 PER REFERENCE (SK-1122)~~
(12) EXISTING 2" GAS LINE TO BE RELOCATED BY OTHERS
(18) REMOVE EXISTING TREES WITHIN R.C.F.C.D. & R.C.T.D. RIGHT-OF-WAY
(28) CONSTRUCT 6" THICK PC CONCRETE ON 14' ACCESS ROAD AS SHOWN ON PLAN
(58) CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27

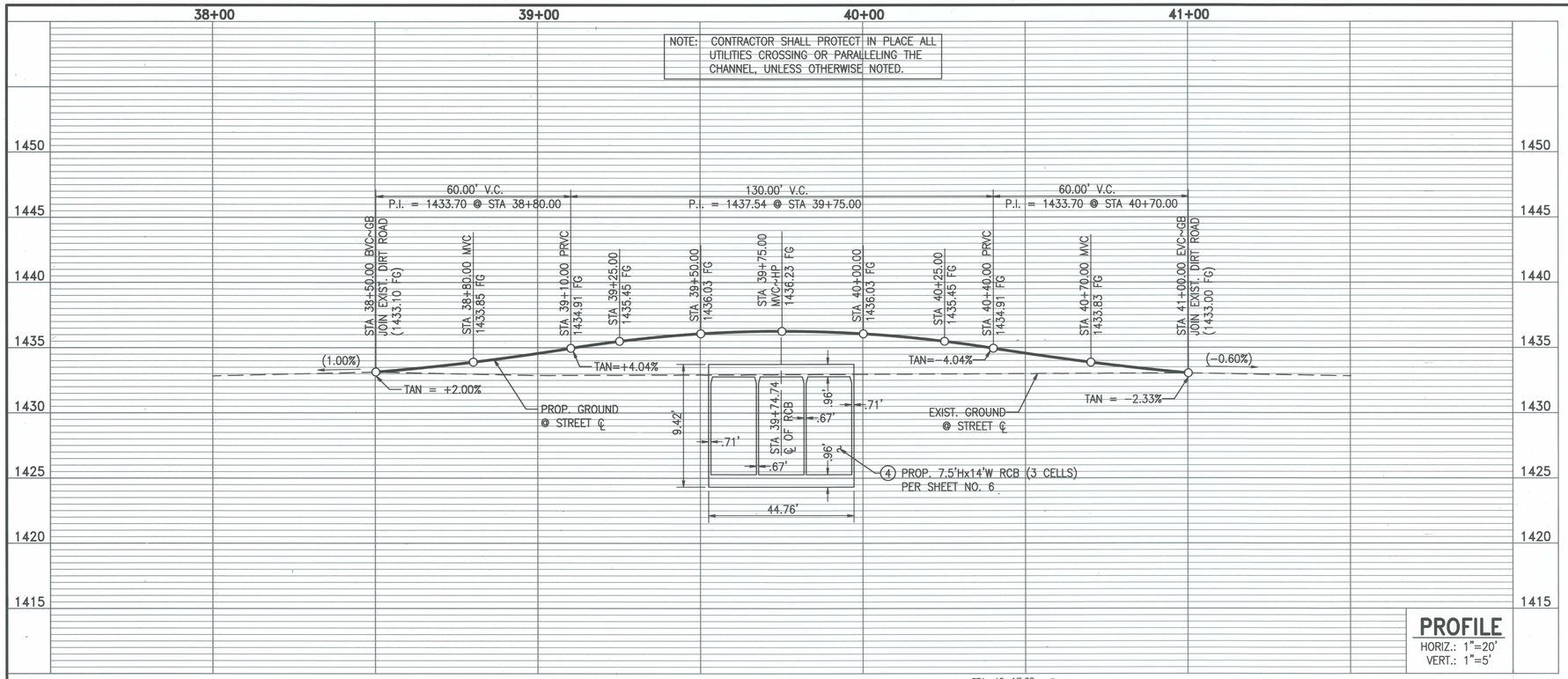


SECTION X-X

N.T.S.




(8) STA. 39+39.88 ℄ OF 14'W DWY. & 14'W GATE
STA. 40+33.02 (8) ℄ OF 14'W DWY. & 14'W GATE
FUTURE R/W
EXIST. 12" IRRIGATION LINE
STA. 38+10.00 JOIN EX. DIRT ROAD
STA. 39+27.70 ANGLE POINT
STA. 40+42.90 ANGLE POINT
STA 41+00.00 JOIN EX. DIRT ROAD
EXIST. R/W
EXIST. 12" WATER LINE
(76) ℄ CB STA. 149+59.10 RT. 121.25'
SEE STORM DRAIN PLANS LINE A-16, SHEET NO. 20
N00°10'31"E
EXIST. 2" GAS LINE
℄ INT. STA. 39+79.70 SHERMAN RD. =STA. 149+75.80 LINE A STAGE 4
N00°10'31"E
EXIST. DIRT ROAD
DAYLIGHT LINE
(76) ℄ CB STA. 150+04.19 RT. 128.70'
(75)(76) ℄ CB STA. 150+10.10 LT. 52.60
EXIST. P/L
PROP. R/W
N89°17'13"W
1435.65 T.O.P.W.
1432.65 T.O.T.
1432.08 FG
1432.62 FG
(1430.0) FL
(1430.22) FG
(1429.9) FG
1431.94 FG
1432.65 FG
1432.28 FG
1432.36 FG
1431.61 FL
1431.83 FL
1431.64 FL
1432.01 FG
1432.19 FG
1432.32 FG~HP
1431.99 FG
1432.20 FG
1431.60 FL
1431.62 FL
1432.07 FG
1431.82 FG
1431.94 FL~HP
1432.27 FG
1431.17 FL
1430.74 FL
1430.70 FL
1431.54 FG
1431.52 FG
1431.11 FG
1431.86 FG
1431.15 FL
1431.49 FL
1430.80 FL
1431.19 FG
1431.62 FG
1431.54 FL
1432.92 FL
1432.29 FG
1432.09 FG
1431.50 FL
1431.57 FG
1431.11 FL
1430.80 FG
1430.21 FG
1431.37 FG
1431.94 FG
1431.54 FG
1431.60 FG
1431.65 FG
1431.94 FG
1431.65 FG
1431.94 FG
1431.65 FG
1431.94



PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'

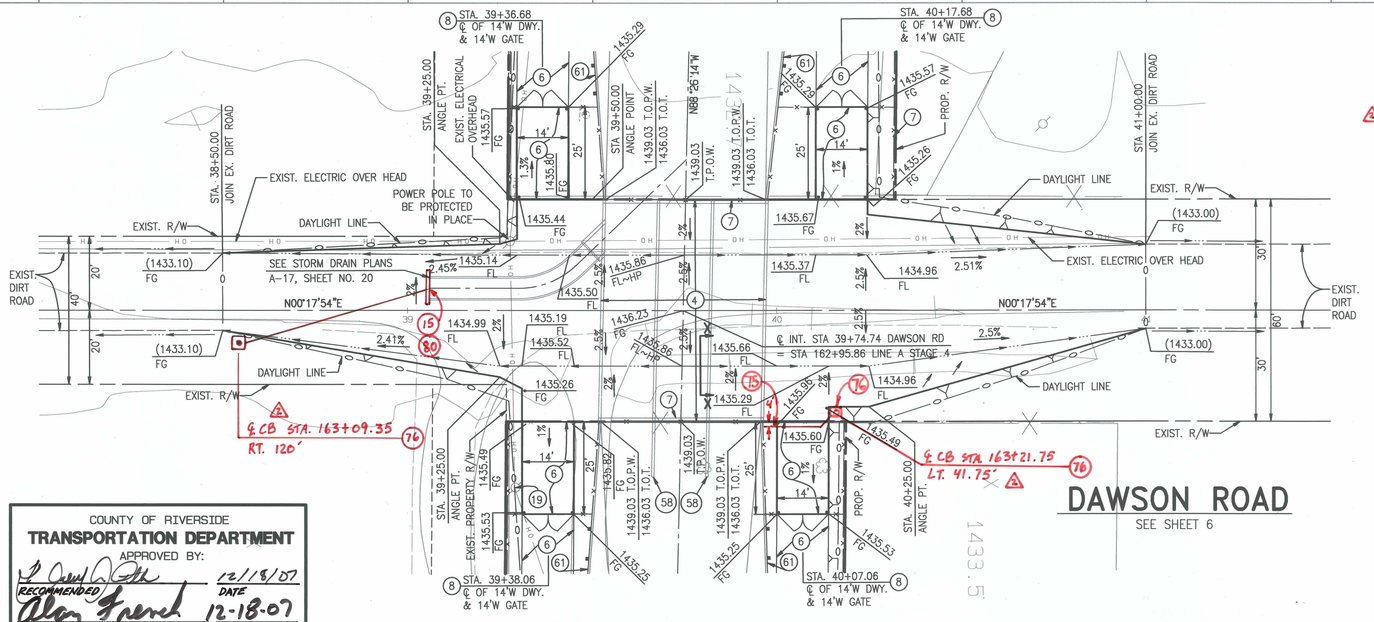
NOTES

(4) CONSTRUCT 7.5'Hx14'W RCB (3 CELLS) PER CALTRANS STD. D81
(6) INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
(7) INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
(8) INSTALL 14' DOUBLE DRIVE GATE PER STD. M801
(19) EXISTING POWER POLE TO BE RELOCATED BY OTHERS
(58) CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
(61) INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
(75) INSTALL 26 LF OF 24" CLASS IV RCP R.C.F.C. STD JS NO. 3. ELEV 'S' = ~~1424~~. 1427. SEE PROFILE ON SHEET 20C. 4
(76) CONSTRUCT CONCRETE DROP INLET PER R.C.F.C. STD CB110.

STREET CL
15'
11'
2.5%
2%
1435.69
2' CLEARANCE
1433.69
TOP OF RCB

SECTION X-X

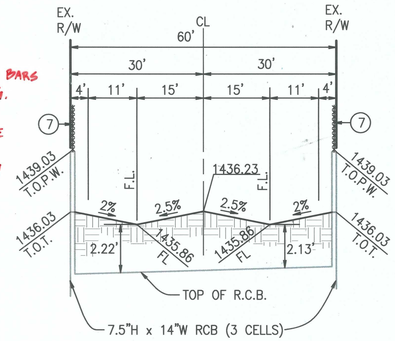
N.T.S.



DAWSON ROAD

SEE SHEET 6

(15) INSTALL MODIFIED CONCRETE BULKHEAD PER STD. M816 WITH "A" BARS CUT 2" CLEAR OF LATERAL OPENING. 4
(80) CONSTRUCT JUNCTION STRUCTURE NO.3 PER JS22B AT CONCRETE BULKHEAD FOR TIE-IN OF 18" CLASS IV RCP. SEE PROFILE ON SHEET 20C.



DAWSON ROAD

SECTION @ STA. 39+74.74
HORIZ.: 1"=10'
VERT.: 1"=1'
GRAPHIC SCALE 1"=10'
0 10 20 30

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/07
IP050154 MS4051

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
RECOMMENDED 12/18/07 DATE
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
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PREPARED BY: DATE: 12-13-07
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ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS	[illegible]	2/9/07
2	PLANIMETRICS		
3	ADDED INLETS AND NOTES.	[illegible]	2/9/07

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

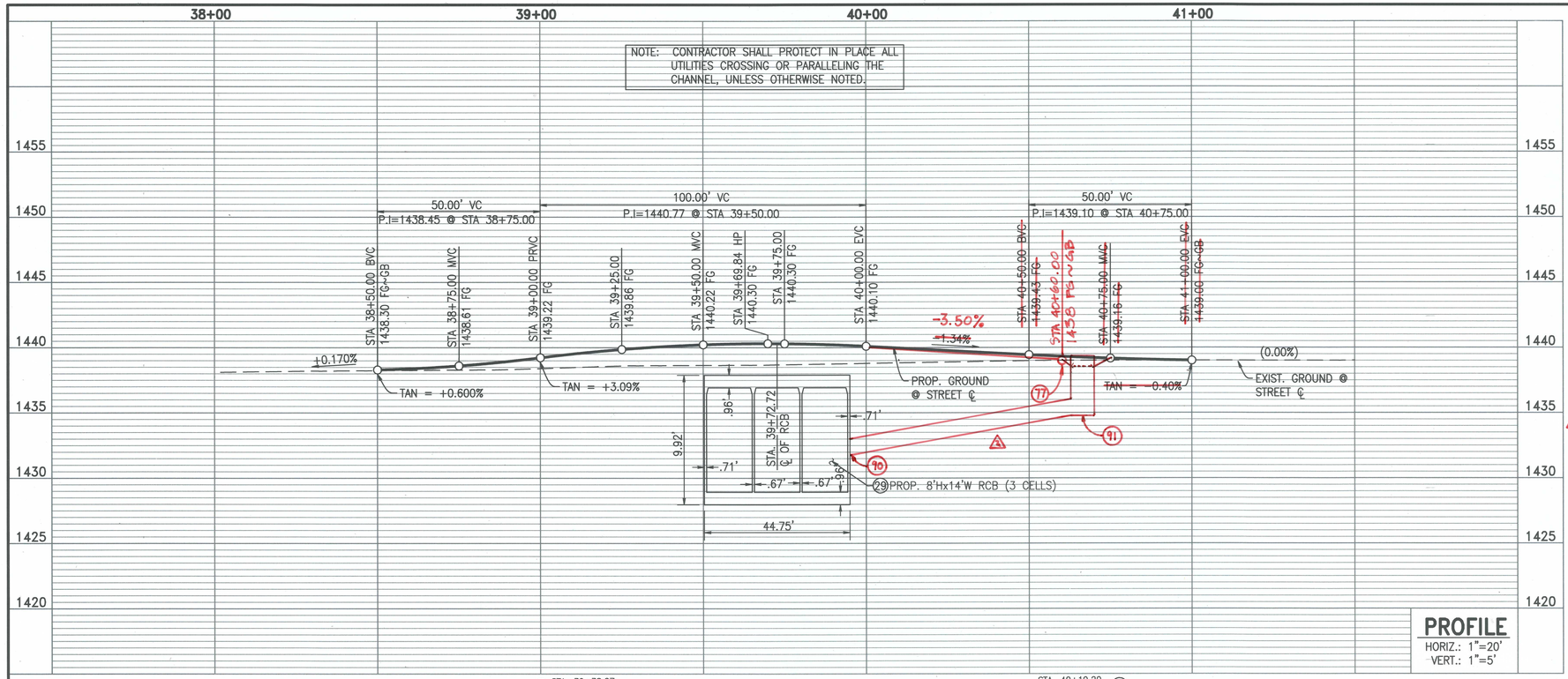
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07
APPROVED BY: DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
DAWSON ROAD CROSSING DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 15 OF 31

G:\2003\03-0338\DWG&PRO\03338line4-Master.pro12/11/2007

16

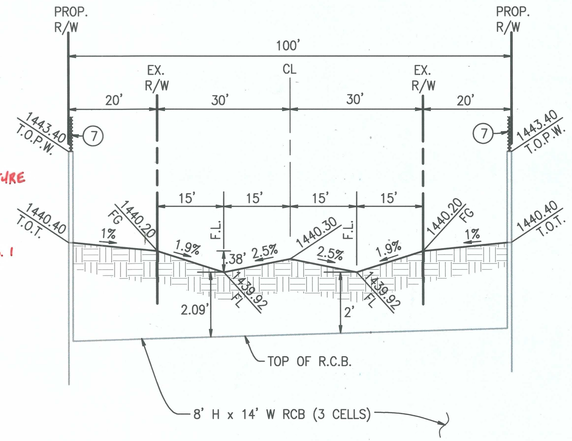


PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'

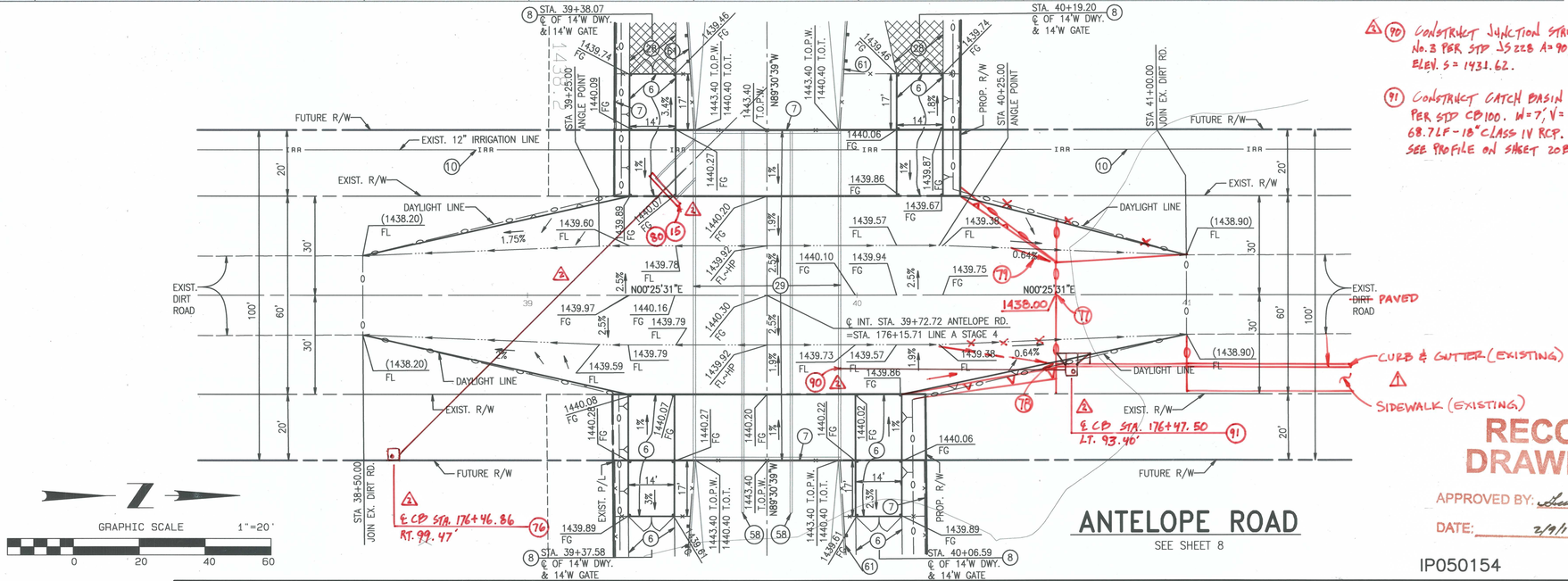
NOTES

(6) INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
(7) INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
(8) INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
(10) EXISTING 12" IRRIGATION LINE TO BE REMOVED AND PLUGGED WITHIN R.C.F.C.D. RIGHT-OF-WAY
(28) CONSTRUCT 6" THICK PC CONCRETE ON 14' ACCESS ROAD AS SHOWN ON PLAN
(29) CONSTRUCT 8'Hx14'W RCB (3 CELLS) PER CALTRANS STD. D81
(58) CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
(61) INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
(71) MATCH EXISTING PAVEMENT. MODIFY GRADING SUCH THAT THE ROADWAY MEETS THE EXISTING PAVED ROAD AND THE SIDE DRAINAGE MATCHES THE EXISTING DITCH.
(76) MODIFY DRAINAGE DIRECTION TO DIRCT FLOWS TO THE EXISTING GUTTER AS DIRECTED BY ENGINEER.
(77) MODIFY DITCH TO DIRECT FLOWS TO EXISTING DITCH AS DIRECTED BY THE ENGINEER.
(15) INSTALL MODIFIED CONCRETE BULKHEAD PER STD. M816 WITH "A" BARS CUT 2" CLEAR OF LATERAL OPENING.
(76) CONSTRUCT CONCRETE DROP INLET PER. STD CB110.
(80) CONSTRUCT JUNCTION STRUCTURE NO.3 PER JS228 AT CONCRETE BULKHEAD FOR TIE-IN OF 18" CLASS IV RCP. SEE PROFILE ON SHEET 20B.



(90) CONSTRUCT JUNCTION STRUCTURE NO.3 PER STD JS228 A=90°, ELEV. S = 1431.62.

(91) CONSTRUCT CATCH BASIN NO. 1 PER STD CB100. W=7', V= 4' 68.7LF-18"CLASS IV RCP. SEE PROFILE ON SHEET 20B.



ANTELOPE ROAD

SEE SHEET 8

ANTELOPE ROAD

SECTION @ STA. 39+72.72
HORIZ.: 1"=10'
VERT.: 1"=1'
GRAPHIC SCALE 1"=10'
0 10 20 30

GRAPHIC SCALE 1"=20'
0 20 40 60

RECORD DRAWINGS
APPROVED BY: Stuart E. McKibbin
DATE: 2/9/17
IP050154 MS4051

SEAL-COUNTY
REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH ND. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: 12/18/07
RECOMMENDED: Alan French 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

17

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: [signature] DATE: 12/13/07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E. OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES AND MISCELLANEOUS		2/9/17
2	PLANIMETRICS		2/9/17
3	ADDED INLETS AND NOTES.		

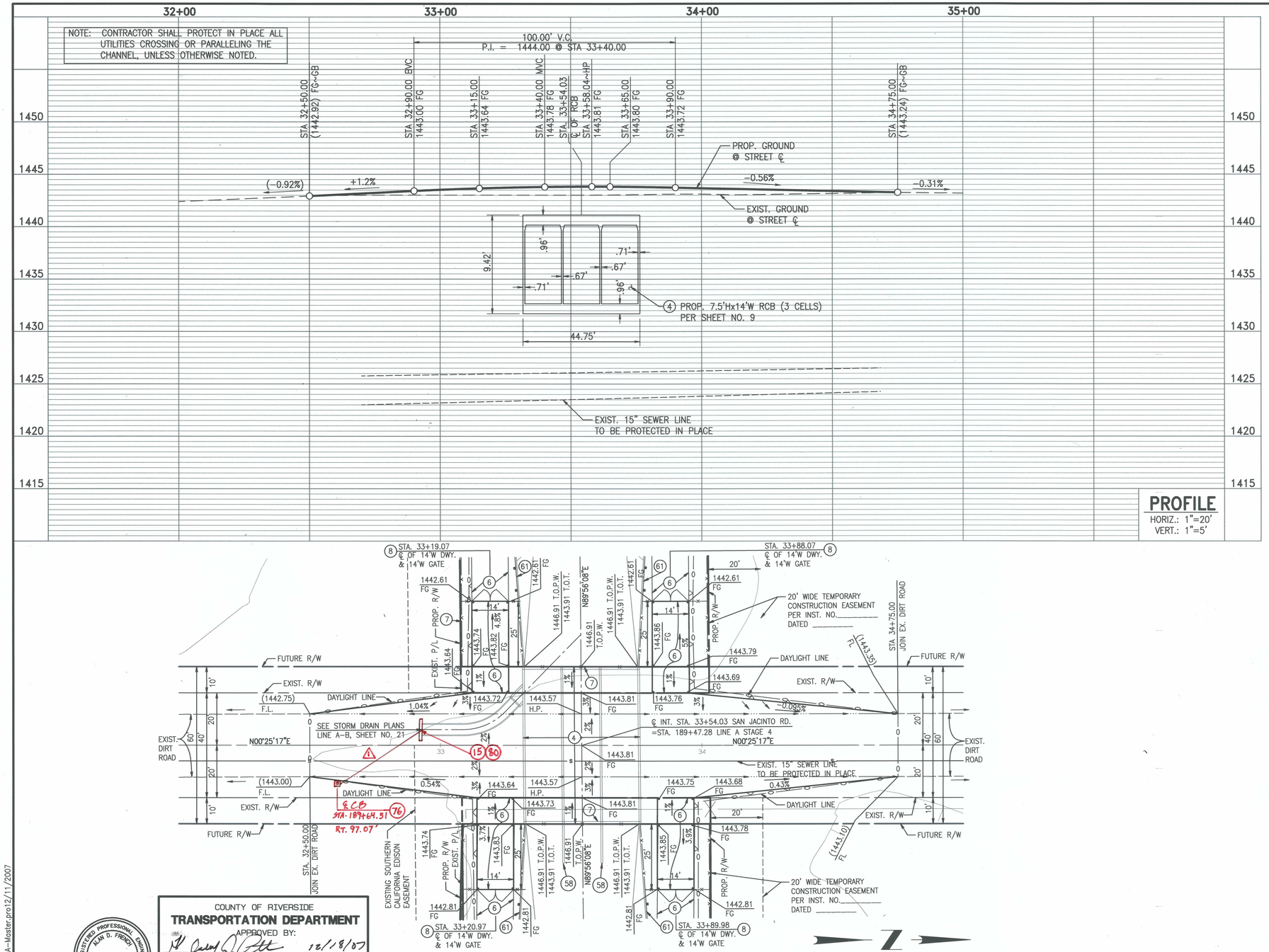
DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: [signature] DATE: 12/21/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
ANTELOPE ROAD CROSSING DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 16 OF 31

G:\2003\03-0338\DWG&PRO\03338line4-Master.pro12/11/2007



PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'

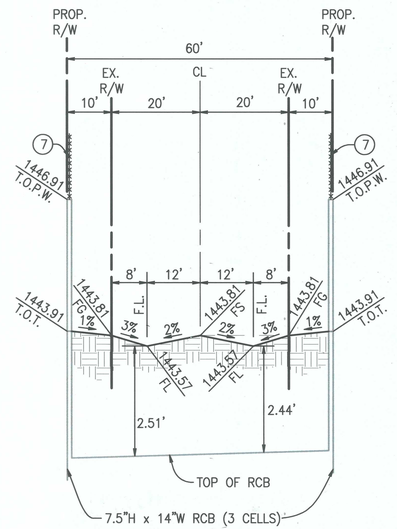
SAN JACINTO ROAD

SEE SHEET 9

GRAPHIC SCALE 1"=20'
0 20 40 60

NOTES

4. CONSTRUCT 7.5'Hx14'W RCB (3 CELLS) PER CALTRANS STD. D81
6. INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
7. INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
8. INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
58. CONSTRUCT NOSE PER DETAIL ON SHEET NO. 27
61. INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
15. INSTALL MODIFIED CONCRETE BULKHEAD PER. STD M816 WITH "A" BARS CAT "2" CLEAR OF LATERAL OPENING.
76. CONSTRUCT CONCRETE DROP INLET PER. STD CB110.
80. CONSTRUCT JUNCTION STRUCTURE No.3 PER JS228 AT CONCRETE BULKHEAD FOR TIE-IN OF 18" CLASS IV RCP. SEE PROFILE ON SHEET 20C.



SAN JACINTO ROAD

SECTION @ STA. 33+54.03
HORIZ.: 1"=10'
VERT.: 1"=1'
GRAPHIC SCALE 1"=10'
0 10 20 30

RECORD DRAWINGS

APPROVED BY: _____

DATE: 2/9/17

IP050154 MS4051

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: _____ DATE 12/18/07
RECOMMENDED _____ DATE 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: _____ DATE 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED INLET AND NOTES		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

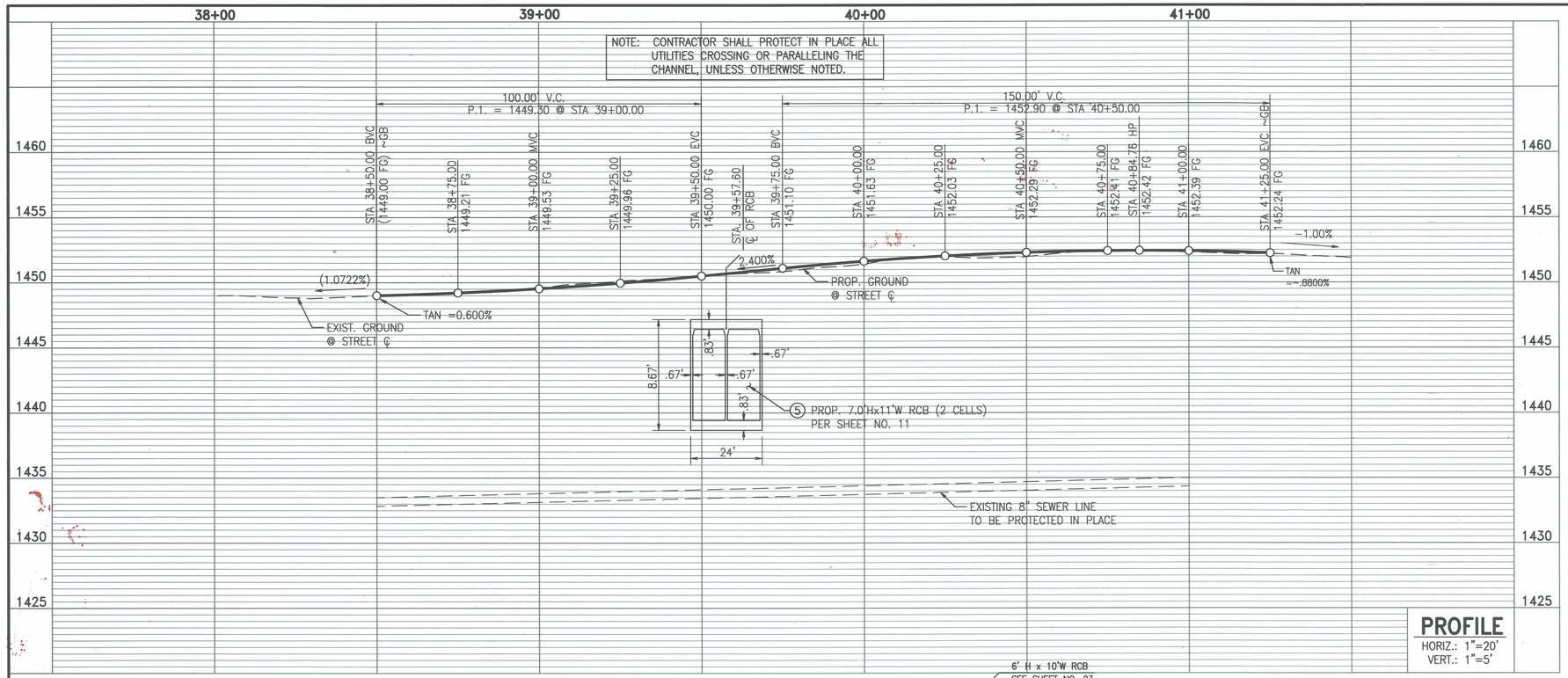
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: _____ DATE: 12/21/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4

SAN JACINTO ROAD CROSSING DETAILS

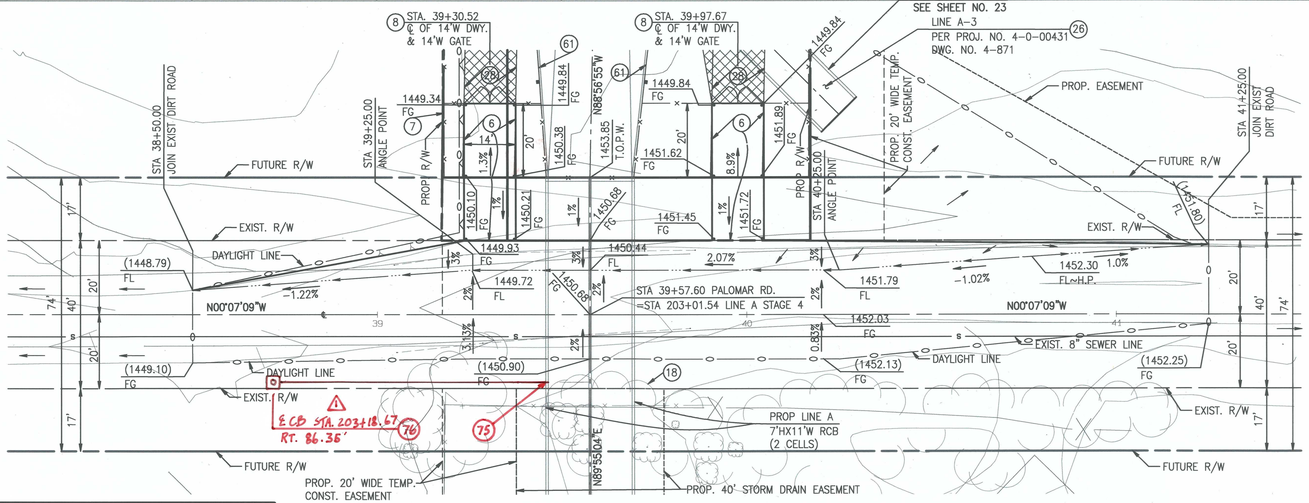
PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 17 OF 31

G:\2003\03-0338\DW&PRO\03338line4-Master.pro12/11/2007



PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'



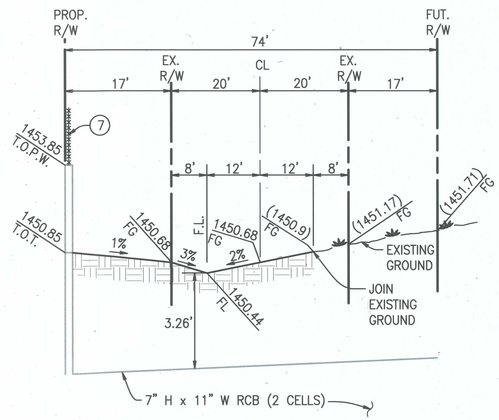
PALOMAR ROAD

SEE SHEET 11

GRAPHIC SCALE 1"=20'
0 20 40 60

NOTES

(5) CONSTRUCT 7.0'Hx11'W RCB (2 CELLS) PER CALTRANS STD. D81
(6) INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
(7) INSTALL 6' HIGH CHAIN LINK FENCE PER STD. M801
(8) INSTALL 14' WIDE DOUBLE DRIVE GATE PER STD. M801
(18) REMOVE EXISTING TREES WITHIN R.C.F.C.D. RIGHT-OF-WAY & WORKING AREA, AS INDICATED
(26) INSTALL 6.0'Hx12.0'W RCB (SINGLE CELL) PER CALTRANS STD. D80
(28) CONSTRUCT 6" THICK PC CONCRETE ON 14' ACCESS ROAD AS SHOWN ON PLAN
(61) INSTALL CABLE RAILING PER CALTRANS STD. PLAN B11-47
(75) CONSTRUCT 73 LF OF 24" CLASS IV RCP AND JUNCTION STRUCTURE No. 3 PER STD DS 228. A=90°, ELEV. S=1442.02. SEE PROFILE ON SHEET 20C.
(76) CONSTRUCT CONCRETE DROP INLET PER STD CD110.



PALOMAR ROAD

SECTION @ STA. 39+57.60
HORIZ.: 1"=10'
VERT.: 1"=1'
GRAPHIC SCALE 1"=10'
0 10 20 30

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

IP050154 MS4051

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: 12/18/07
RECOMMENDED: Alan French DATE 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE 2/3/07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E. OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED INLET AND NOTES	RR	2/9/07

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

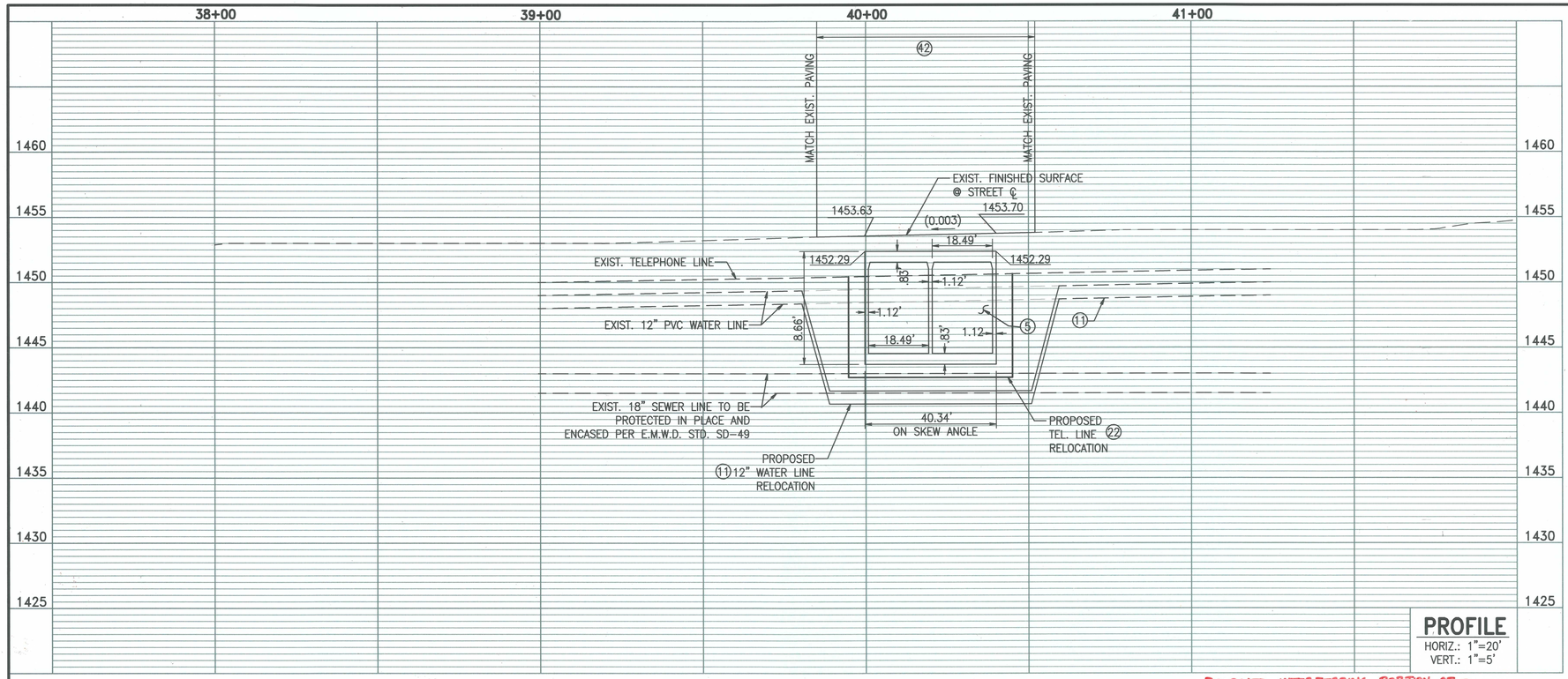
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
PALOMAR ROAD CROSSING DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 18 OF 31

19

G:\2003\03-0338\DWG&PRO\03338line4-Master.pro12/11/2007



PROFILE

HORIZ.: 1"=20'
VERT.: 1"=5'

NOTES

(5) CONSTRUCT 7.0'Hx11'W RCB (2 CELLS) PER CALTRANS STD. D81

(11) EXISTING WATER LINES TO BE RELOCATED, ~~SEE SHEET NO. 30 PER E.M.W.D. (SK-1126)~~ BY EMWD.

(18) REMOVE EXISTING TREES ~~WITHIN R.C.F.C.D. & R.C.T.D. RIGHT-OF-WAY~~

(22) EXISTING TELEPHONE LINE TO BE RELOCATED BY OTHERS

(27) CONSTRUCT MANHOLE NO. 3 PER R.C.F.C.D. STD. DWG. MH253

(37) REMOVE & REPLACE EXIST. 8" CURB & GUTTER PER R.C.T.D. STD. DWG. NO. 201. SEE SHEET 19A.

(38) REMOVE & REPLACE EXIST. ~~35'~~ WIDE COMMERCIAL DRIVEWAY AS NECESSARY. SEE SHEET 19A.

(39) REMOVE & REPLACE EXIST. 6' HIGH BLOCK WALL AS NECESSARY. SEE SHEET 19A.

(40) REMOVE & REPLACE EXIST. 6' HIGH CHAIN LINK FENCE AS NECESSARY. SEE SHEET 19A.

(41) EXIST. WATER ~~APPURTENANCES~~ LINES TO BE PROTECTED IN PLACE ~~OR REPLACED AS NECESSARY PER E.M.W.D. REQUIREMENTS~~

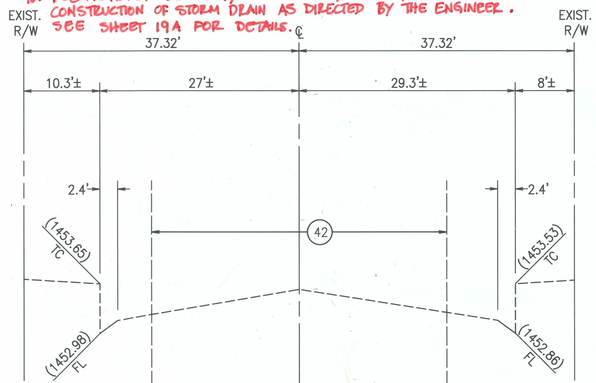
(42) REMOVE & REPLACE EXIST. A.C. PAVEMENT AS NECESSARY, SEE PAVING PLANS FOR ACTUAL DIMENSIONS ON SHEET 31A.

(43) PROVIDE TEMPORARY FENCING AS DIRECTED BY THE ENGINEER.

(44) RELOCATE WATER SERVICE LINE IN KIND. CO-ORDINATE WITH EMWD STAFF.

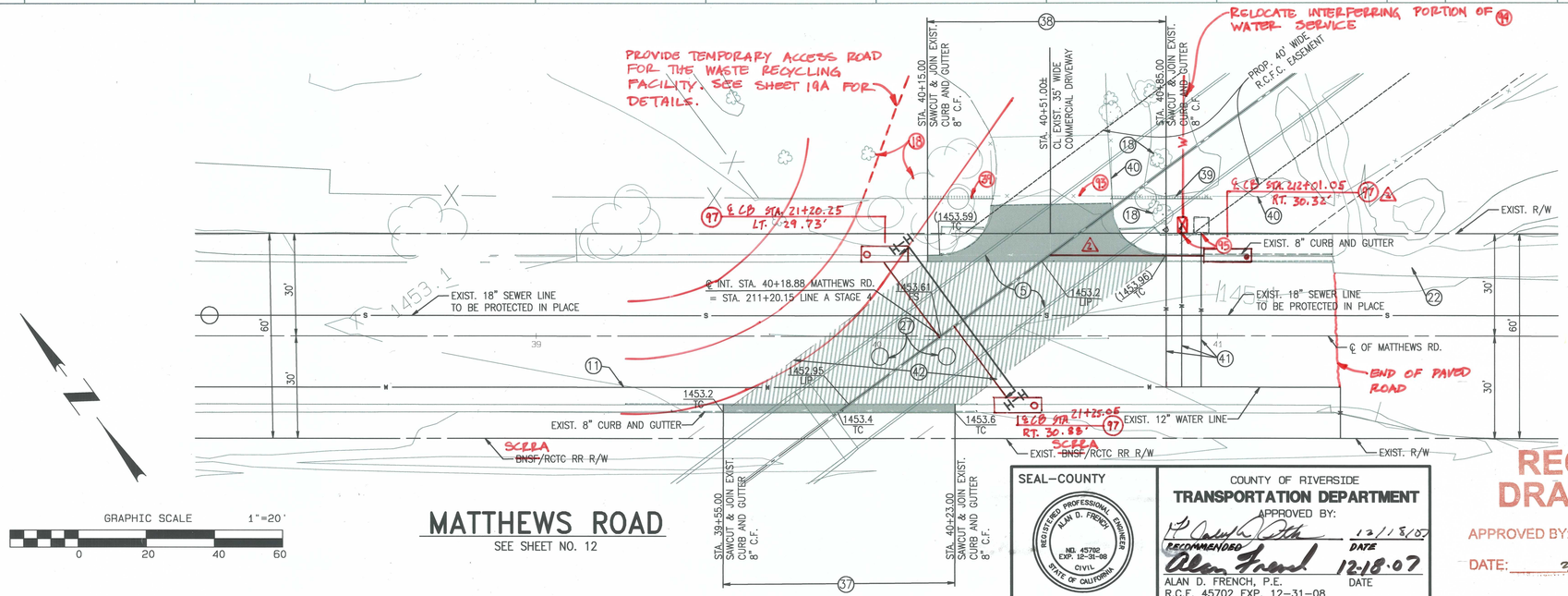
(45) WATER APPURTENANCES AND FIRE HYDRANT TO BE RELOCATED BY EMWD.

(46) RECONSTRUCT DRIVEWAY, BLOCK WALL, GATES, RUMBLE STRIPS AFTER CONSTRUCTION OF STORM DRAIN AS DIRECTED BY THE ENGINEER. SEE SHEET 19A FOR DETAILS.



(90) CONSTRUCT JUNCTION STRUCTURE NO. 3 PER JS22B.

(97) CONSTRUCT CATCH BASIN NO. 1 PER STD CB100. W=14', H=4', AND 24" CLASS IV RCP. RCP SPRINGLINE TO MATCH RCB SPRINGLINE.



GRAPHIC SCALE 1"=20'
0 20 40 60

MATTHEWS ROAD

SEE SHEET NO. 12

MATTHEWS ROAD SECTION H-H

SECTION @ STA. 40+18.88
HORIZ.: 1"=10'
VERT.: 1"=10'

GRAPHIC SCALE 1"=10'
0 10 20 30

SEAL-COUNTY

REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY:
RECOMMENDED — DATE 12/18/07
ALAN D. FRENCH, P.E. — DATE 12-18-07
R.C.E. 45702 EXP. 12-31-08

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/07

IP050154 MS4051

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED MISCELLANEOUS PLANIMETRICS.	MB	2/9/07
2	ADDED NOTES.	MB	2/9/07

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

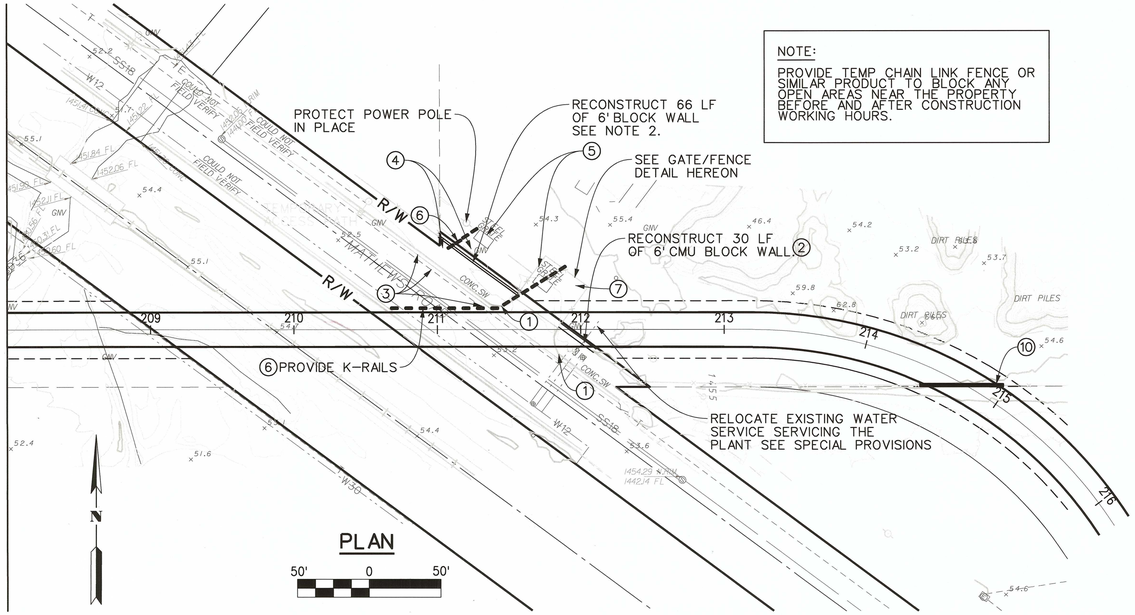
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/26/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
MATTHEWS ROAD CROSSING DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 19 OF 31

20

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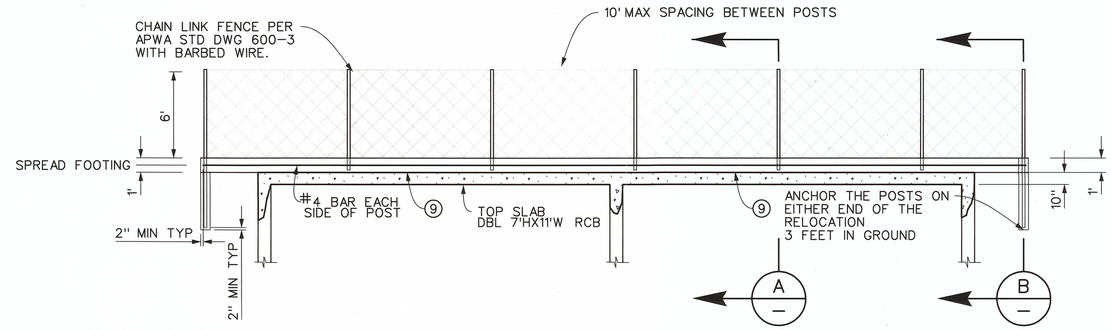


NOTE:

PROVIDE TEMP CHAIN LINK FENCE OR SIMILAR PRODUCT TO BLOCK ANY OPEN AREAS NEAR THE PROPERTY BEFORE AND AFTER CONSTRUCTION WORKING HOURS.

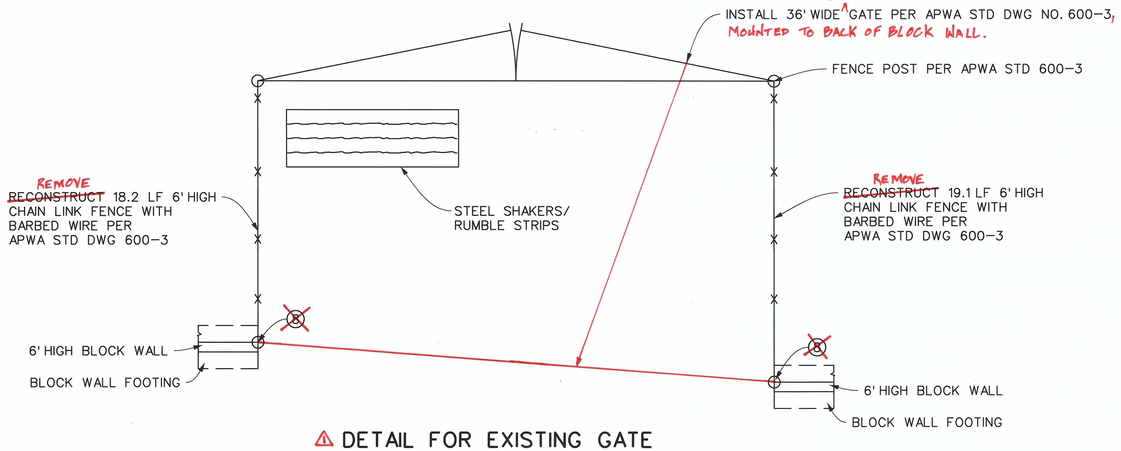
PLAN

50' 0 50'



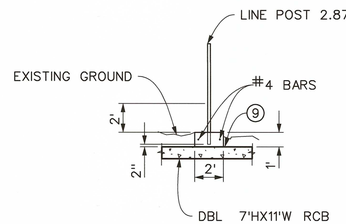
MODIFICATIONS TO THE STD APWA DRAWING 600-3

NTS

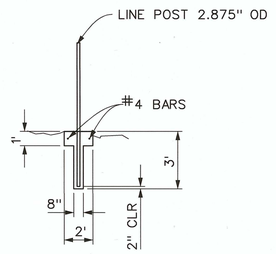


⚠ DETAIL FOR EXISTING GATE RECONSTRUCTION

NTS



SECTION A-A



SECTION B-B

NOTES

1. SEE PAVING PLAN SHEET 31A FOR CURB AND DRIVEWAY RECONSTRUCTION
2. REPLACE CMU BLOCK WALL (AS MARKED ON PLANS) PER CITY OF MENIFEE STD FREE STANDING BLOCK WALL, OPTION "A"
3. PLACE APPROX. 53 LF OF TEMPORARY ASPHALT ACCESS RAMP ON THE CURB TO PROVIDE TEMPORARY DRIVEWAY FOR THE FACILTY. PLACE TEMPORARY 2" AC FOR DRIVEWAY.
4. REMOVE INTERFERRING TREES AND BLOCKWALL TO PROVIDE TEMPORARY DRIVEWAY.
5. SALVAGE STEEL SHAKERS/RUMBLE STRIPS AND SET AT TEMPORARY DRIVEWAY AND RESET AT ORIGINAL LOCATION AFTER CONSTRUCTION.
6. INSTALL K-RAILS
7. REMOVE AND RECONSTRUCT EXISTING ENTRANCE GATE PER APWA STD DWG 600-3 AND AS SHOWN HERE. SALVAGE ALL DEVICES AND RUMBLE STRIPS ON THE GATE AND PLACE THEM BACK AFTER RECONSTRUCTION NEAR THEIR ORIGINAL LOCATION.
8. FENCE POST PER APWA STD 600-3 AND MODIFIED FOOTING AS SHOWN HERE IN SECTION A-A.
9. INSTALL BOND BREAKER PER SECTION 41-9 OF CALTRANS STD SPECIFICATION 2010.
10. REPLACE INTERFERRING PORTION (~60 LF) OF CHAIN LINK FENCE PER APWA STD DWG 600-3 WITH BARBED WIRE AND MODIFICATIONS AS SHOWN HEREON.

RECORD DRAWINGS

APPROVED BY: Ronald Goodall

DATE: 2/9/17

REGISTERED PROFESSIONAL ENGINEER HERBIB DEGADA No. 52203 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER ROBERT J. CULLEN No. 44684 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services. TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK
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EL. 1478.07

REF.	DESCRIPTION	APPR.	DATE
⚠	REVISED DETAIL.	RHM	2/9/17

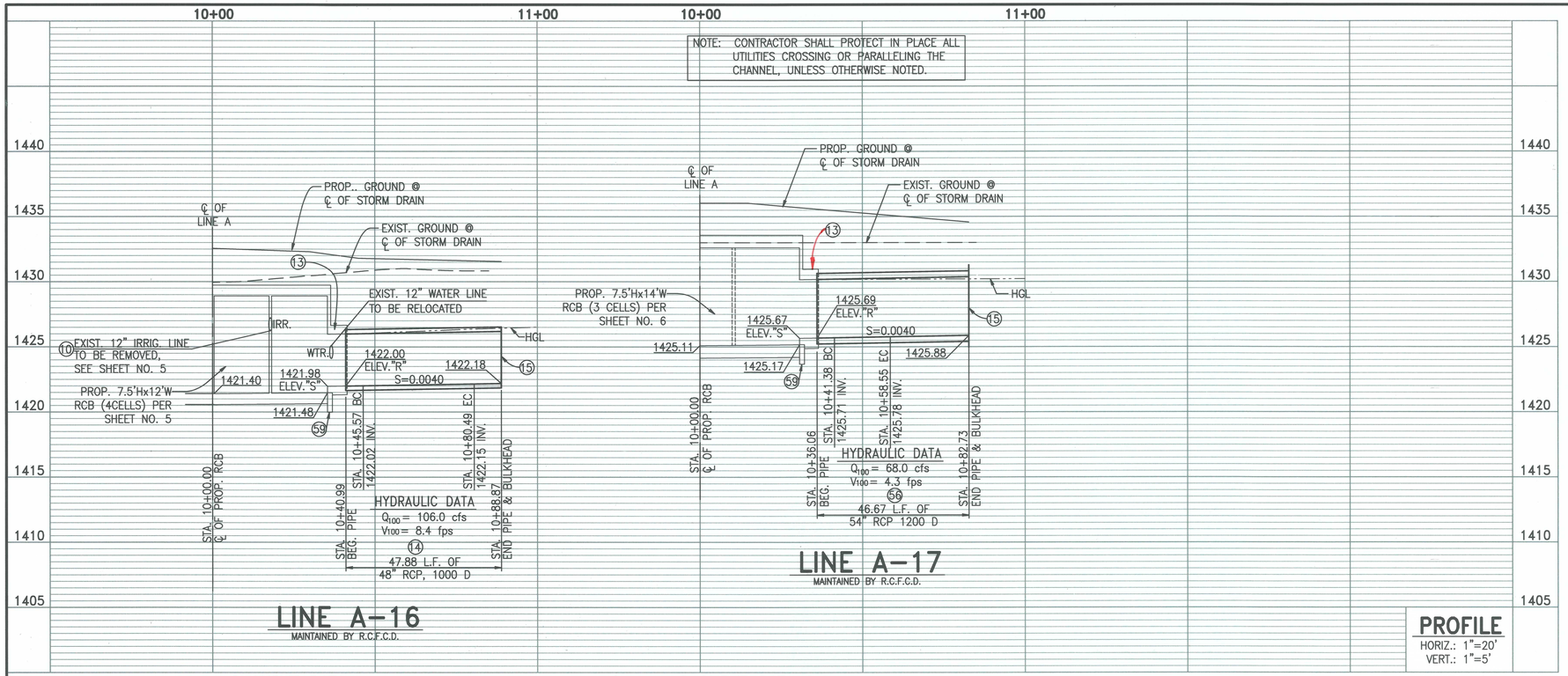
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY: ROHINI MUSTAFA
DRAWN BY: MICHAEL ARMENTA
DATE DRAWN: AUGUST 2014
RECOMMENDED FOR APPROVAL BY: DATE: 9/22/2014
APPROVED BY: DATE: 22 Sept 2014

ROMOLAND MDP LINE A STAGE 4

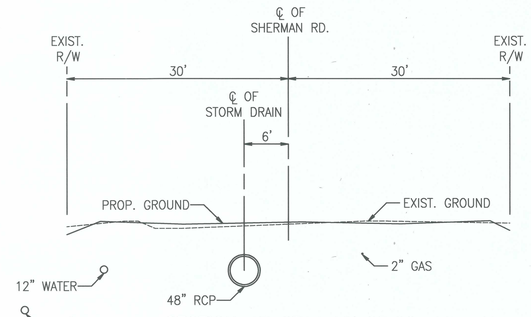
WASTE RECYCLING FACILTY TEMPORARY ACCESS PLAN

PROJECT NO. 4-00310-04
DRAWING NO. 4-846
SHEET NO. 19A OF 31

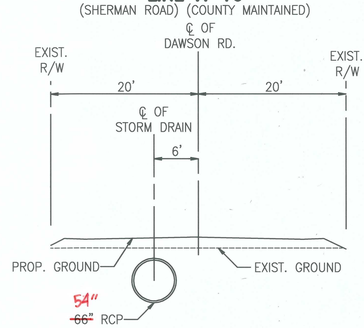


PROFILE
HORIZ.: 1"=20'
VERT.: 1"=5'

NOTES
(10) EXIST. 12" IRRIGATION LINE TO BE REMOVED AND PLUGGED PER GEN. NOTE NO. 8 ON SHEET NO.1
(13) CONSTRUCT JUNCTION STRUCTURE NO. 1 PER STD. JS226, FOR A,B,C, ELEV. R & ELEV. S VALUES SEE PLAN
(14) INSTALL 48" RCP, BEDDING PER STD. M815
(15) INSTALL CONCRETE BULKHEAD PER STD. M816
(56) INSTALL 54" RCP, BEDDING PER STD. M815
(59) CONSTRUCT EDGE BEAM PER DETAIL ON SHEET NO. 27



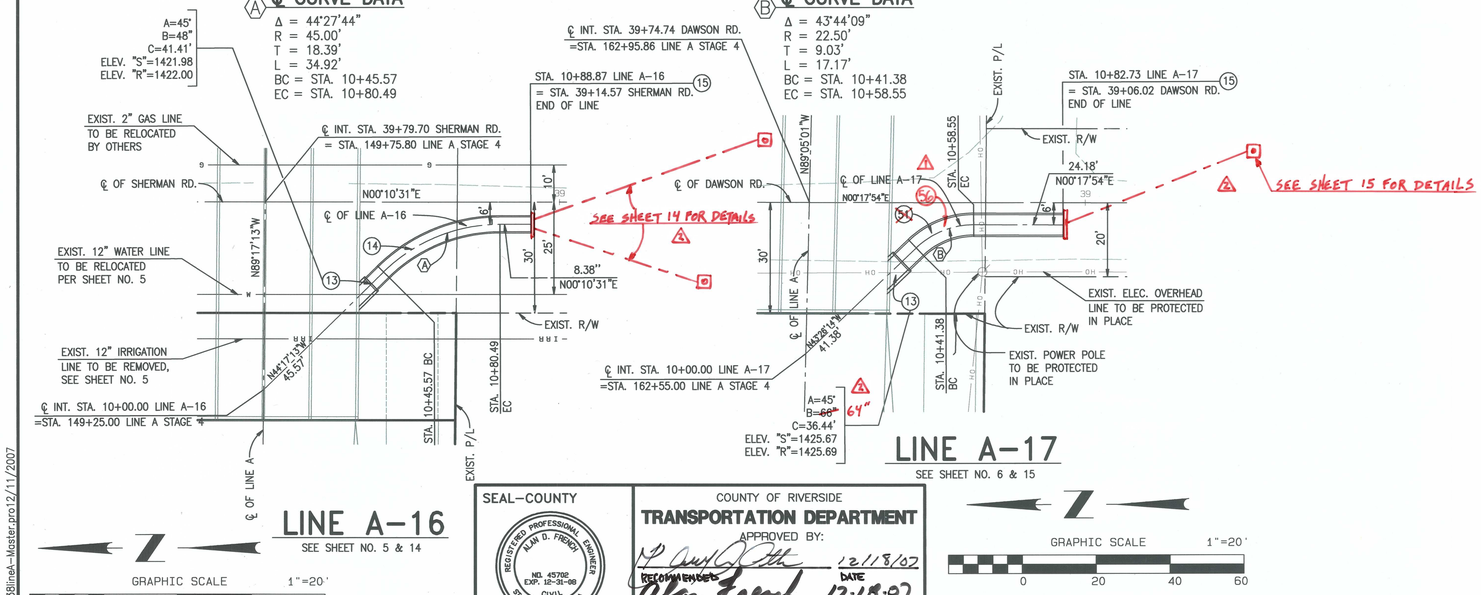
SECTION AT STA. 10+85.00
TYPICAL FROM STA. 10+80.49 TO STA. 10+88.87
LINE A-16
(SHERMAN ROAD) (COUNTY MAINTAINED)



SECTION AT STA. 10+70.00
TYPICAL FROM STA. 10+58.55 TO STA. 10+82.73
LINE A-17
(DAWSON ROAD) (NOT COUNTY MAINTAINED)

Ⓐ ℄ CURVE DATA
Δ = 44°27'44"
R = 45.00'
T = 18.39'
L = 34.92'
BC = STA. 10+45.57
EC = STA. 10+80.49

Ⓑ ℄ CURVE DATA
Δ = 43°44'09"
R = 22.50'
T = 9.03'
L = 17.17'
BC = STA. 10+41.38
EC = STA. 10+58.55



LINE A-16
SEE SHEET NO. 5 & 14

LINE A-17
SEE SHEET NO. 6 & 15

GRAPHIC SCALE 1"=20'
0 20 40 60

SEAL—COUNTY
REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH ND. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: 12/18/07
RECOMMENDED: Alan French DATE 12-18-07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

IP050154 MS4051

RECORD DRAWINGS
APPROVED BY: Scott R. Hildebrand
DATE: 2/9/17

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

22

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12-3-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E. OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES	SRH	2/9/17
2	ADDED INLETS AND NOTES	SRH	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

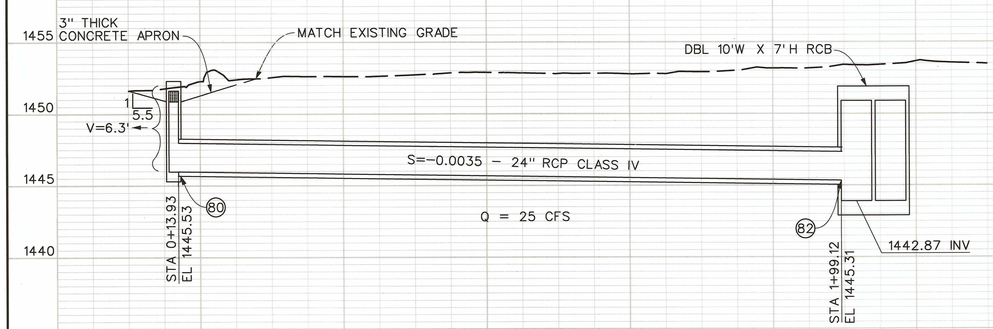
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
LINES A-16, A-17 & A-18

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 20 OF 31

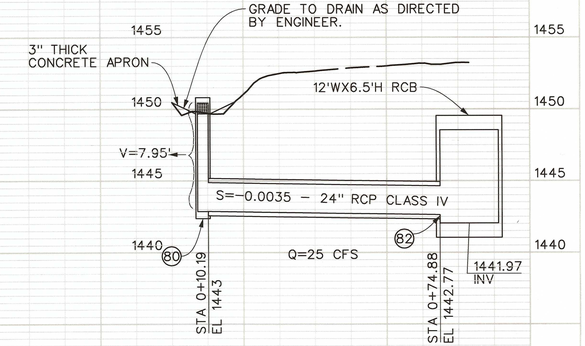
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NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED.



SCRRA INLET 1 ON LINE A STAGE 4

MAINLINE STA 210+15.39
SEE SHEET 12 OF DRAWING NO. 4-846

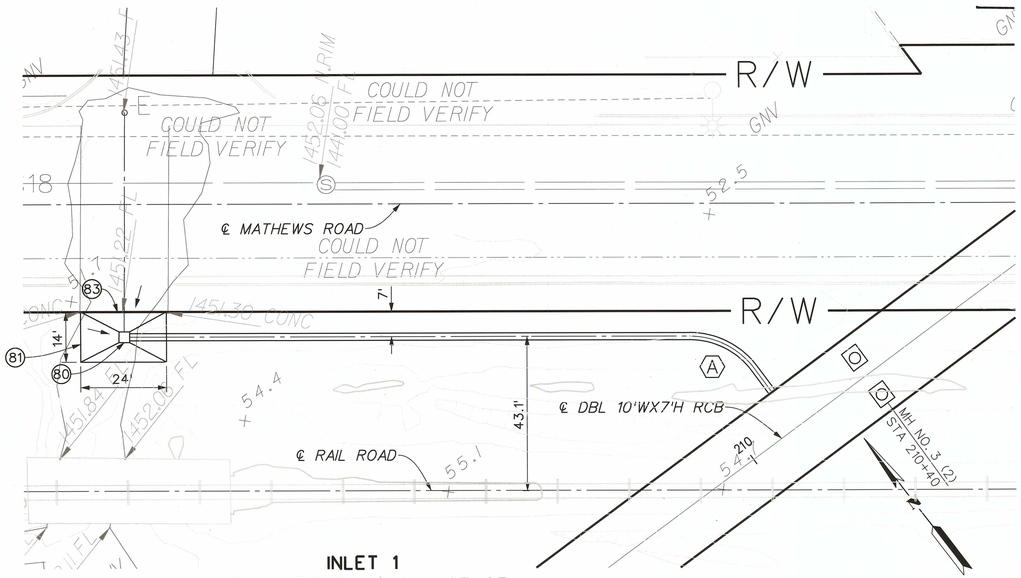


SCRRA INLET 2 ON LINE A-3

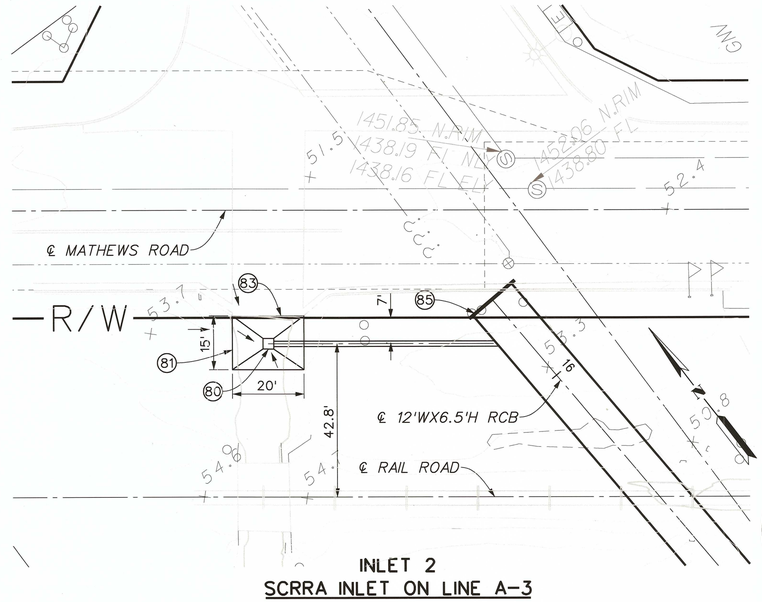
MAINLINE STA 16+17.50
SEE SHEET 2 OF DRAWING NO. 4-871

(A) ℄ CURVE DATA

Δ = 53° 29'48.84"
R = 22.50'
L = 21.01'
T = 11.34'
BC = STA 1+70.42
EC = STA 1+91.43
N = 2212936.23
E = 6284840.23



INLET 1
SCRRA INLET ON LINE A STAGE 4



INLET 2
SCRRA INLET ON LINE A-3

NOTES

80 CONSTRUCT CONCRETE DROP INLET PER RCFC STD DWG CB110. 'V' AS SHOWN ON PLANS.

81 CONSTRUCT 3" THINK CONCRETE APRON.

82 CONSTRUCT JS NO. 3 PER RCFC STD DWG JS 228. ELEVATION 'S' AS SHOWN. D=24"
INLET 1: A=90° INLET 2: A=49.8°

83 GRADE TO DRAIN TOWARDS THE INLET.

84 CONSTRUCT OPENINGS ON NORTH, WEST, AND SOUTH SIDES OF THE INLETS.

85 CONSTRUCT CONCRETE BULKHEAD PER DETAIL ON SHEET 26.

RECORD DRAWINGS
APPROVED BY: 2/9/17

REGISTERED PROFESSIONAL ENGINEER
NEXBIB DEGASA
No. 52203
CIVIL
STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER
ROBERT J. CULLEN
No. 44684
CIVIL
STATE OF CALIFORNIA

20' 0 20'

23

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

BENCH MARK

REF.	DESCRIPTION	APPR.	DATE
	REVISIONS		

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

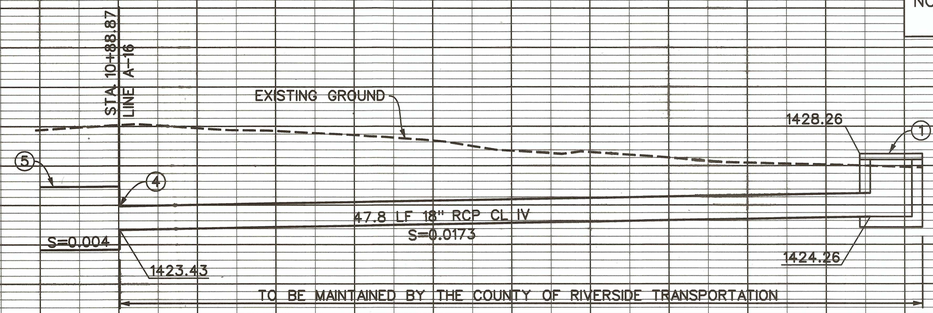
DESIGNED BY: ROHINI MUSTAFA
DRAWN BY: MICHAEL ARMENTA
DATE DRAWN: AUGUST 2014
RECOMMENDED FOR APPROVAL BY:
DATE: 9/22/2014
APPROVED BY:
DATE: 22 SEPT 2014

ROMOLAND MDP LINE A STAGE 4

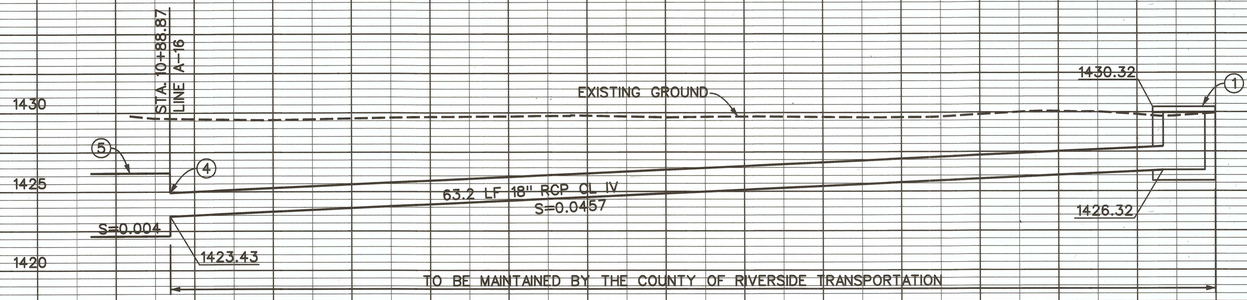
SCRRA INLETS

PROJECT NO. 4-00310-04
DRAWING NO. 4-846
SHEET NO. 20A OF 31

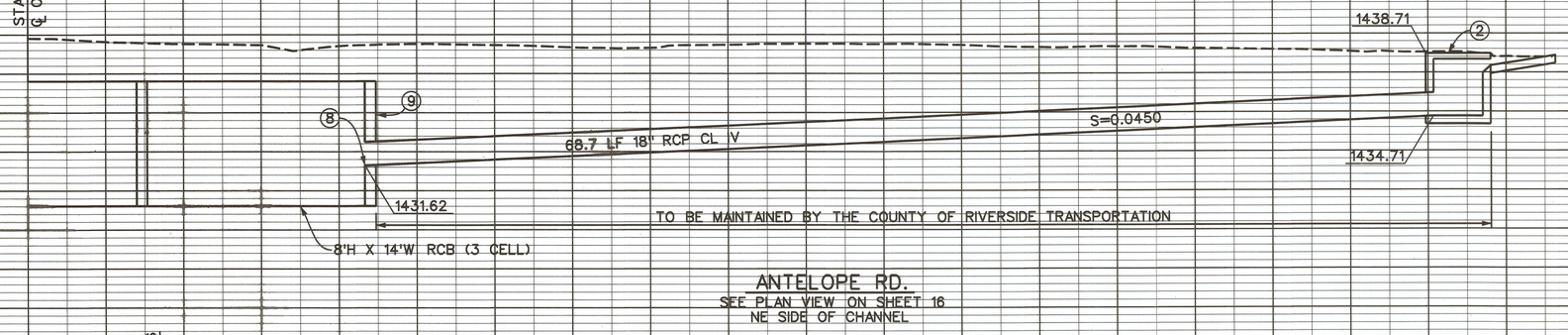
NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED.



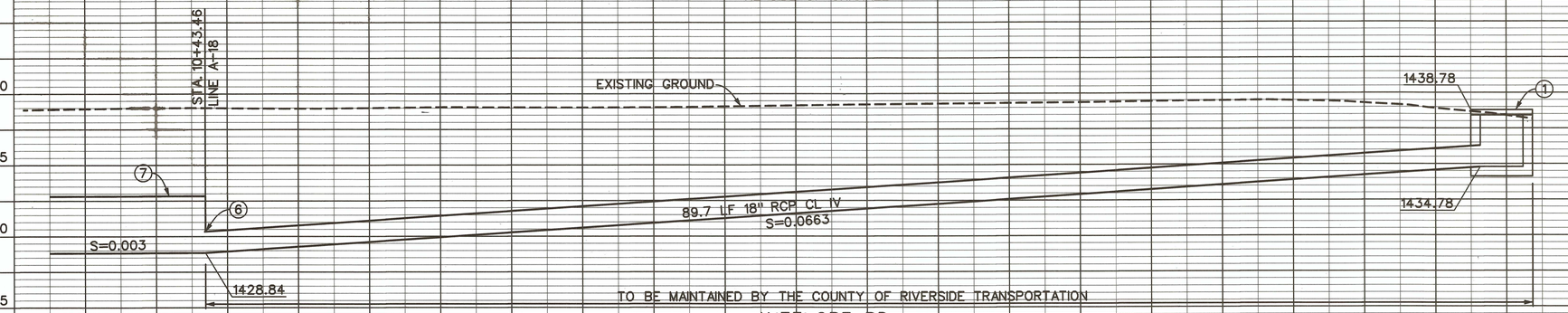
SHERMAN RD.
SEE PLAN VIEW ON SHEET 14
SW SIDE OF CHANNEL



SHERMAN RD.
SEE PLAN VIEW ON SHEET 14
SE SIDE OF CHANNEL



ANTELOPE RD.
SEE PLAN VIEW ON SHEET 16
NE SIDE OF CHANNEL



ANTELOPE RD.
SEE PLAN VIEW ON SHEET 16
SE SIDE OF CHANNEL

NOTES

1. CONSTRUCT CONCRETE DROP INLET PER STD CB110: V=4', 3 SIDES OPEN (N, S & E), GRADE TO DRAIN.
2. CONSTRUCT CATCH BASIN NO. 1 PER STD CB100: V=4', W=7'.
3. ~~CONSTRUCT JUNCTION STRUCTURE No. 6 PER STD JS231, A=20°~~
4. TIE-IN TO ROMOLAND MDP LINE A-16 AT BULKHEAD.
5. ROMOLAND MDP LINE A-16, 48" RCP STUB-OUT.
6. TIE-IN TO ROMOLAND MDP LINE A-18 AT BULKHEAD.
7. ROMOLAND MDP LINE A-18, 4'H x 8'W RCB STUB-OUT.
8. CONSTRUCT JUSCTION STRUCTURE No. 3 PER STD JS228, A=90°
9. CONSTRUCT 8'X14' RCB (3 CELL) PER CALTRANS STD D81.

RECORD DRAWINGS
APPROVED BY: Lauren Hunt
DATE: 2/9/17

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

REF.	REVISIONS	APPR.	DATE
1	DELETED NOTE	LH	2/9/17

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

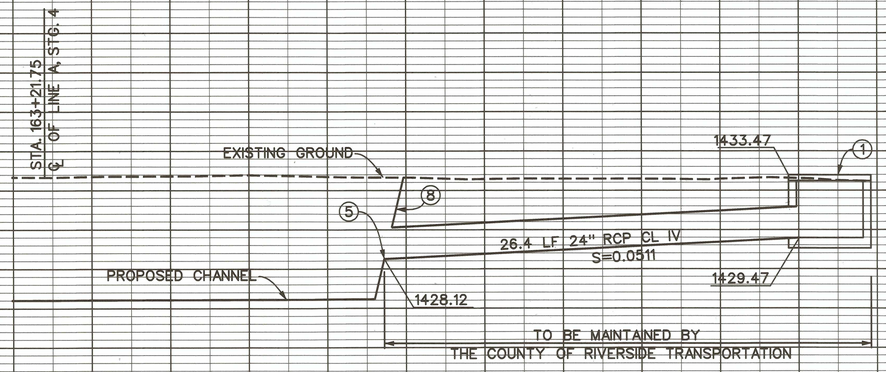
DESIGNED BY: A. DONOHOO
DRAWN BY: A. DONOHOO
DATE DRAWN: JAN. 2017
RECOMMENDED FOR APPROVAL BY: DATE:
APPROVED BY: DATE:

ROMOLAND MDP LINE A - STAGE 4

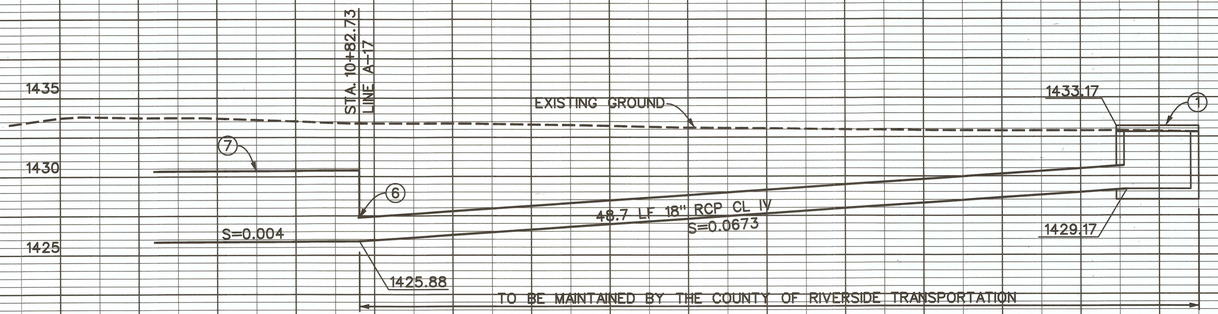
CONNECTOR PIPE PROFILES

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 20B OF 31

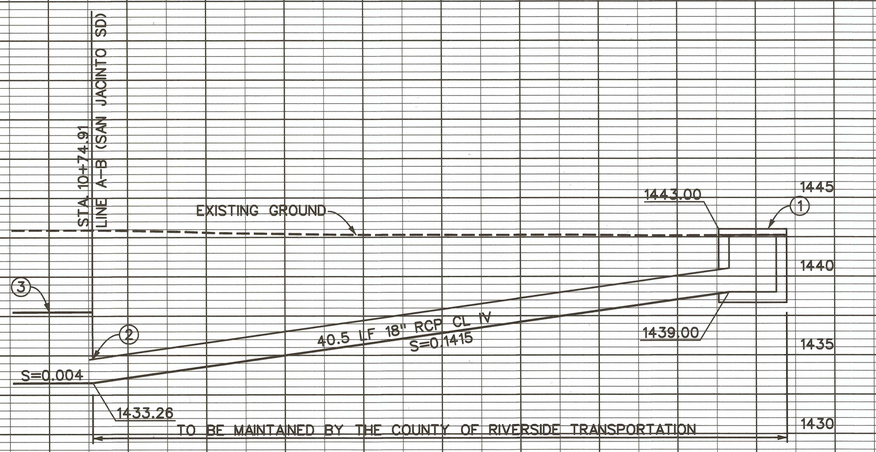
NOTE: CONTRACTOR SHALL PROTECT IN PLACE ALL UTILITIES UNLESS OTHERWISE NOTED.



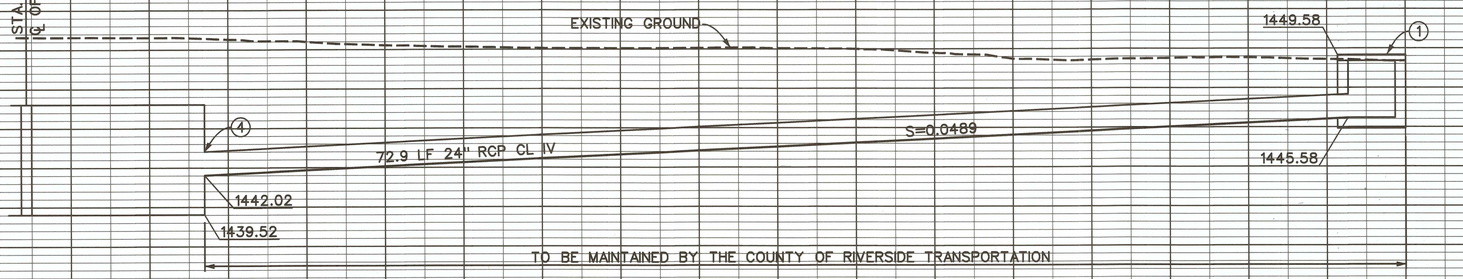
DAWSON RD.
SEE PLAN VIEW ON SHEET 15
NE SIDE OF CHANNEL



DAWSON RD.
SEE PLAN VIEW ON SHEET 15
SE SIDE OF CHANNEL



SAN JACINTO RD.
SEE PLAN VIEW ON SHEET 17
SE SIDE OF CHANNEL



PALOMAR RD.
SEE PLAN VIEW ON SHEET 18
SE SIDE OF CHANNEL

NOTES

1. CONSTRUCT CONCRETE DROP INLET PER STD CB110 V=4', 3 SIDES OPEN (N, S & E), GRADE TO DRAIN.
2. TIE-IN TO SAN JACINTO ROAD STORM DRAIN AT BULKHEAD.
3. SAN JACINTO ROAD STORM DRAIN, 54" RCP STUB-OUT.
4. CONSTRUCT JUNCTION STRUCTURE No. 3 PER STD JS228, A=90°
5. CONSTRUCT JUNCTION STRUCTURE No. 6 PER STD JS231, A=90°
6. TIE-IN TO ROMOLAND MDP LINE A-17 AT BULKHEAD.
7. ROMOLAND MDP LINE A-17, 54" RCP STUB-OUT.
8. APPROXIMATE SLOPE OF CHANNEL WALLS AT TRANSITION.

RECORD DRAWINGS

APPROVED BY: [signature]

DATE: 2/9/17

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.

TWO WORKING DAYS BEFORE YOU DIG

REF.	REVISIONS DESCRIPTION	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY: A. DONOHOO
DRAWN BY: A. DONOHOO
DATE DRAWN: JAN. 2017

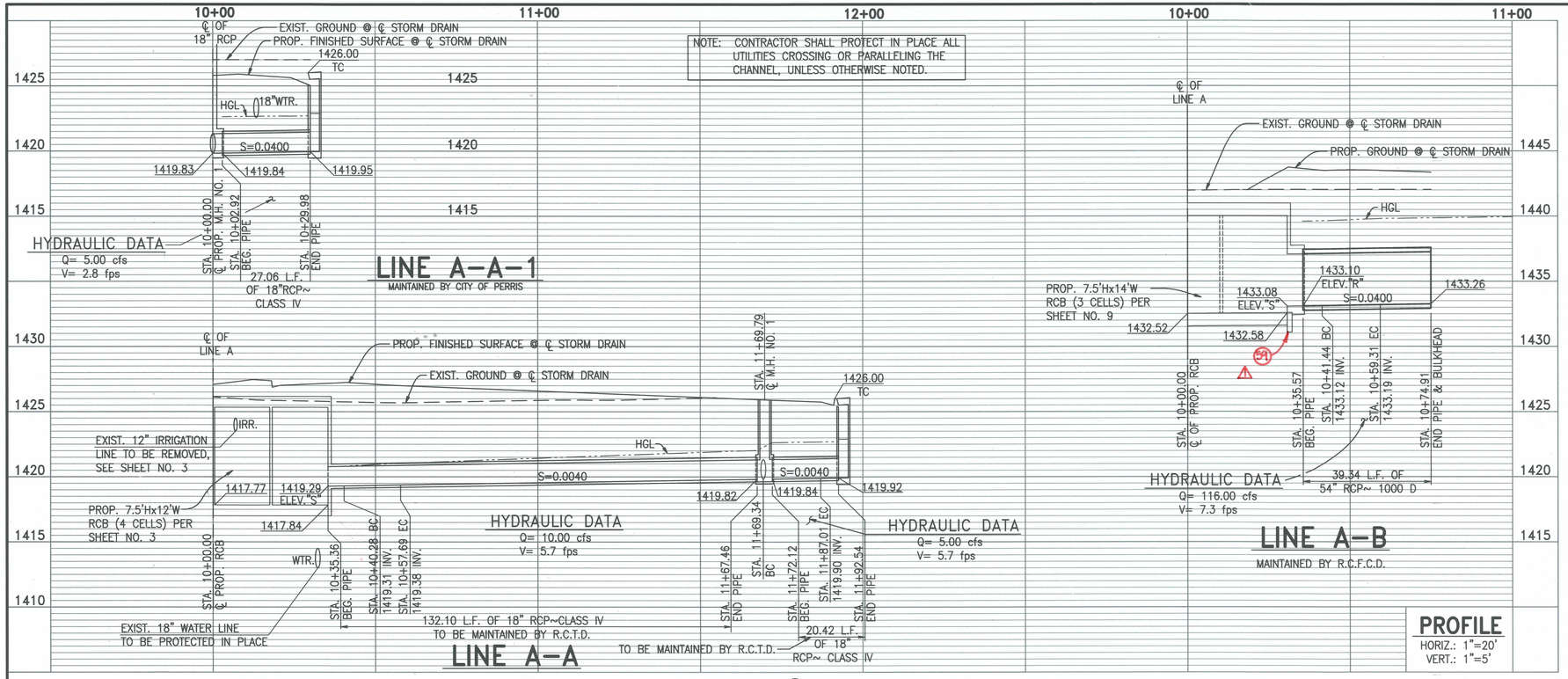
RECOMMENDED FOR APPROVAL BY: DATE:

APPROVED BY: DATE:

ROMOLAND MDP
LINE A - STAGE 4

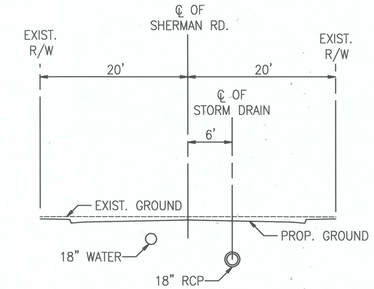
CONNECTOR PIPE PROFILES

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 20C OF 31

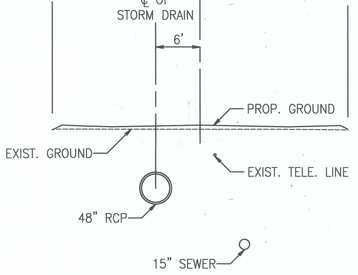


NOTES

(13) CONSTRUCT JUNCTION STRUCTURE NO. 1 PER STD. JS226, FOR A,B,C, ELEV. R & ELEV. S VALUES SEE PLAN
(15) INSTALL CONCRETE BULKHEAD PER STD. M816
(31) INSTALL 18" RCP, BEDDING PER STD. M815
(32) CONSTRUCT MANHOLE NO.1 PER STD. MH251
(33) CONSTRUCT CATCH BASIN PER R.C.T.D. STD. 300, (W & H=PER PLAN)
(34) CONSTRUCT GUTTER DEPRESSION, CASE C PER R.C.T.D. STD. 311
(49) CONSTRUCT JUNCTION STRUCTURE NO. 3 PER STD. JS228
(56) INSTALL 54" RCP, BEDDING PER STD. M815
(59) CONSTRUCT SPECIAL BEAM PER DETAIL ON SHEET NO. 27



SECTION AT STA. 11+00.00
TYPICAL FROM STA. 10+57.69 TO STA. 11+47.00
LINE A-A
(TRUMBLE ROAD) (NOT COUNTY MAINTAINED)



SECTION AT STA. 10+65.00
TYPICAL FROM STA. 10+59.31 TO STA. 10+74.91
LINE A-B
(SAN JACINTO ROAD) (NOT A COUNTY MAINTAINED)

GRAPHIC SCALE 1"=10'
0 10 20 30

Ⓐ ℄ CURVE DATA

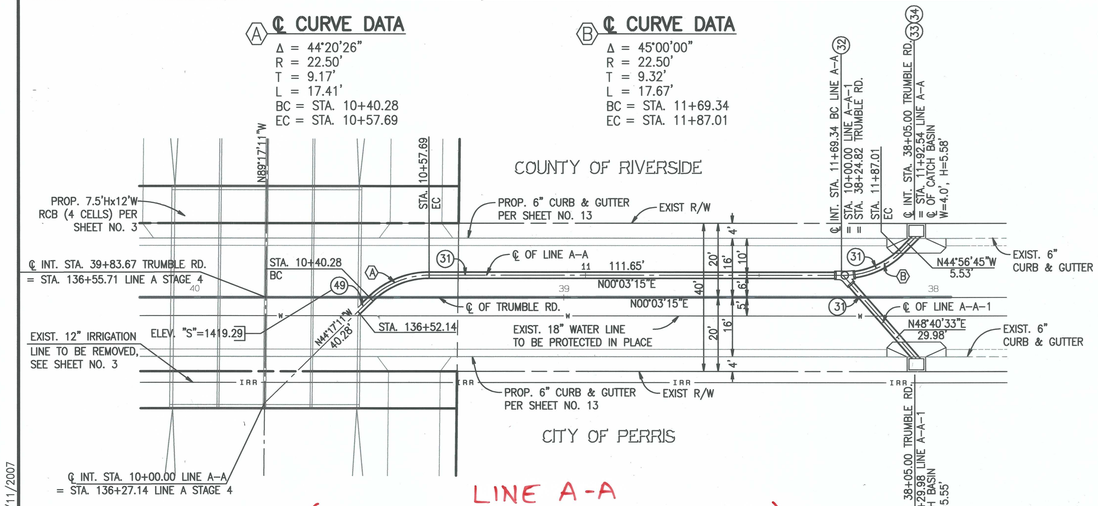
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T = 9.17'
L = 17.41'
BC = STA. 10+40.28
EC = STA. 10+57.69

Ⓑ ℄ CURVE DATA

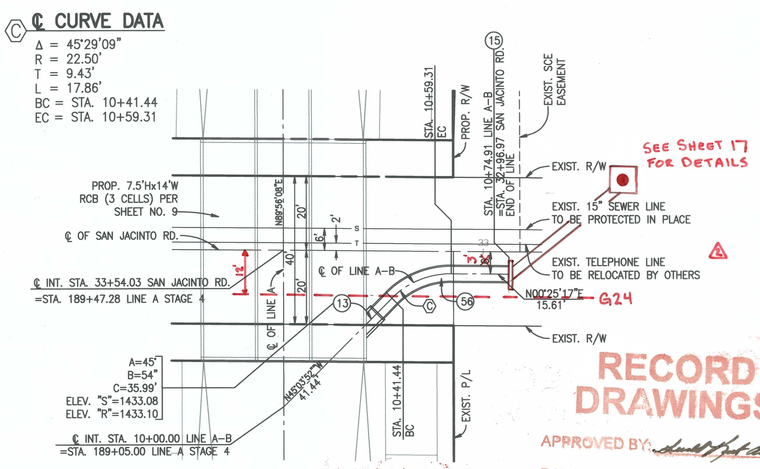
Δ = 45°00'00"
R = 22.50'
T = 9.32'
L = 17.67'
BC = STA. 11+69.34
EC = STA. 11+87.01

Ⓒ ℄ CURVE DATA

Δ = 45°29'09"
R = 22.50'
T = 9.43'
L = 17.86'
BC = STA. 10+41.44
EC = STA. 10+59.31



LINE A-A
TRUMBLE ROAD STORM DRAIN
SEE SHEET NO(S). 3 & 13



SEE SHEET 17 FOR DETAILS

LINE A-B
SAN JACINTO STORM DRAIN
SEE SHEET NO(S). 9 & 17

GRAPHIC SCALE 1"=20'
0 20 40 60

IP050154 MS4051

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

CITY OF PERRIS
HABIB M. MOTLAGH — DATE 12-12-07

SEAL—COUNTY
REGISTERED PROFESSIONAL ENGINEER ALAN D. FRENCH NO. 45702 EXP. 12-31-08 CIVIL STATE OF CALIFORNIA

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: DATE 12/18/07
RECOMMENDED: Alan French DATE 12.18.07
ALAN D. FRENCH, P.E. DATE
R.C.E. 45702 EXP. 12-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

24

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12/13/07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES	MM	2/9/07
2	REVISED PLAN AND ADDED EXISTING GAS LINE	MM	2/9/07

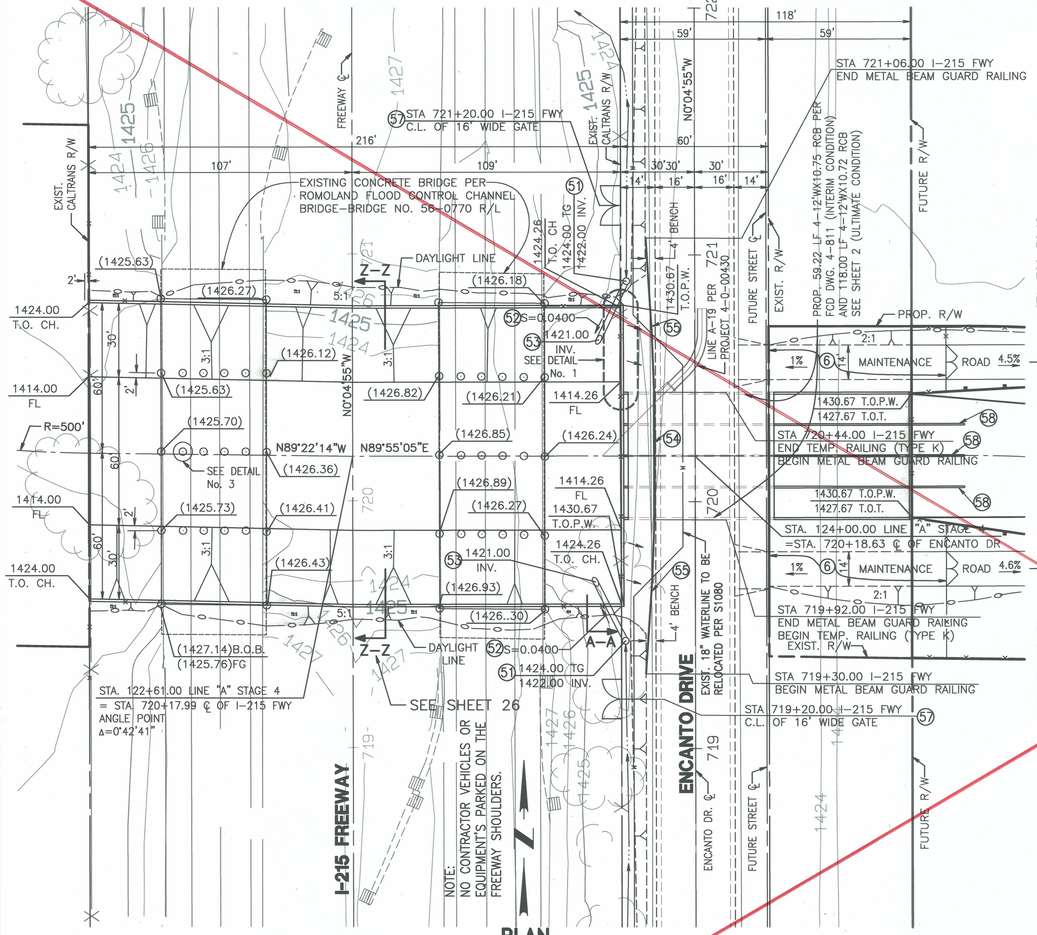
DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/21/07
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

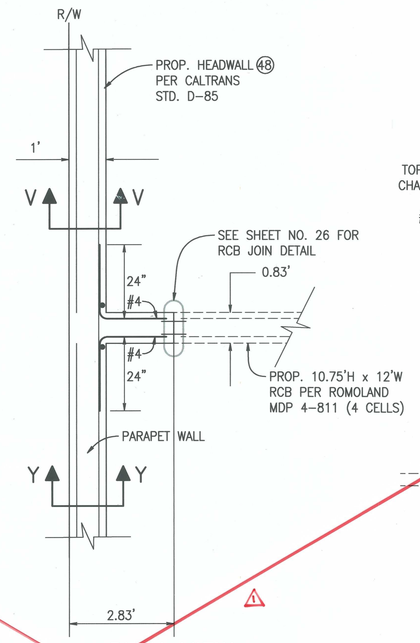
ROMOLAND MDP
LINE A - STAGE 4
TRUMBLE RD. & SAN JACINTO RD.
STORM DRAIN

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 21 OF 31

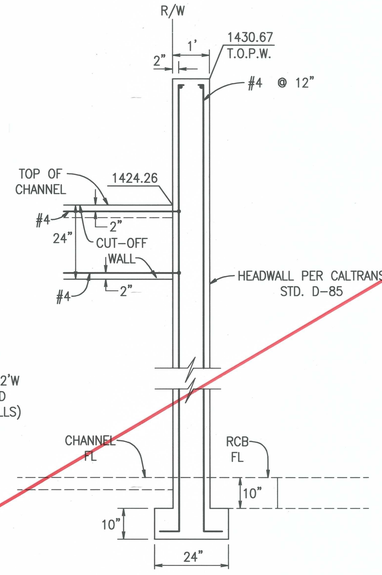
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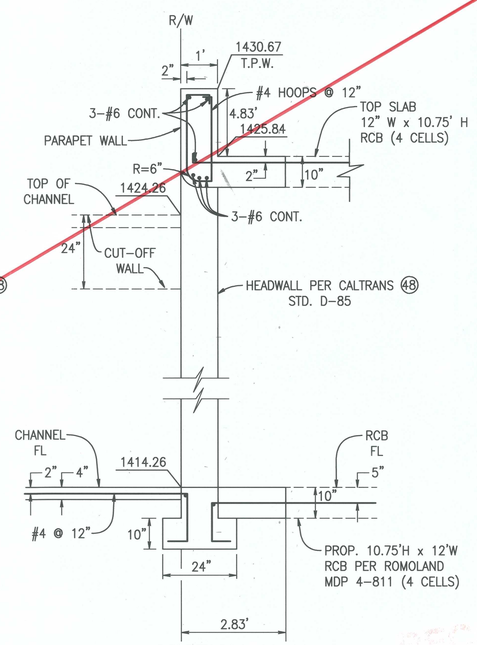
PLAN
SCALE: 1"=30'
SEE SHEET NO. 2



PLAN VIEW
SCALE 1"=2'



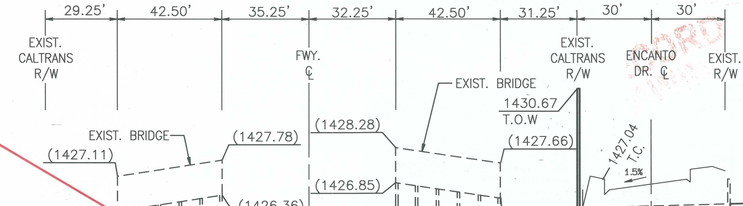
SECTION V-V
PROFILE VIEW No. 1
SCALE 1"=2'



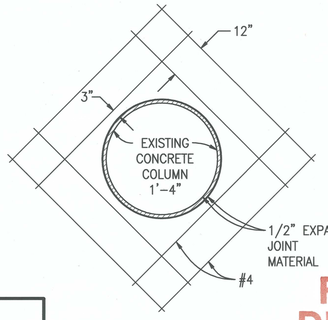
SECTION Y-Y
PROFILE VIEW No. 2
SCALE 1"=2'

NOTES
(6) INSTALL 3" THICK CL 2 AGGREGATE BASE ON 14' ACCESS RD.
(16) CONSTRUCT CONCRETE DRIVEWAY PER R.C.T.D. STD. 207 (W=PER PLAN)
(48) CONSTRUCT HEADWALL PER CALTRANS STD. D-85
(51) CONSTRUCT TYPE X INLET PER R.C.F.C.D. STD. DWG. CB108
(52) INSTALL 24" CMP
(53) CONSTRUCT JUNCTION STRUCTURE NO. 7 PER R.C.F.C.D. STD. DWG. JS 232
(54) INSTALL TEMPORARY RAILING (TYPE K) PER CALTRANS STD. PLAN T3
(55) INSTALL METAL BEAM GUARD RAILING PER CALTRANS STD. PLAN A77F
(57) INSTALL CHAIN LINK GATE PER CALTRANS STD. PLAN A85
(58) CONSTRUCT NOSE PER DETAIL ON SHEET No. 27

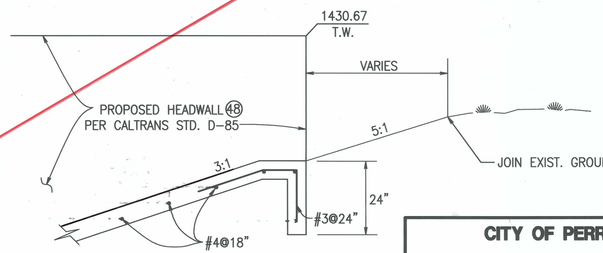
DETAIL No.1



PROFILE
SCALE: HORIZ. 1"=30'
VERT. 1"=3'



NOTE:
SLOPE TO EXIST. GROUND IF CHANNEL DOWNSTREAM IS NOT YET CONSTRUCTED (PER DWG. 4-856)



SECTION A-A
SCALE 1"=2'

CITY OF PERRIS
HABIB M. MOTLAGH — DATE 12-12-07

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

DETAIL No.3

IP050154 MS4051

CALTRANS PERMIT No. 08-05-N-MC-0355

REGISTERED PROFESSIONAL ENGINEER — SCOTT R. HILDEBRANDT — NO. C44762 EXP. 3-31-08 — CIVIL — STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH (951) 686-1070

PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 8, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	DELETED SHEET		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/26/07
APPROVED BY: DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
215 FWY. CROSSING STRUCTURAL DETAILS AND ENCANTO DRIVE CROSSING DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 22 OF 31

25

G:\2003\03-0338\DWG&PRO\03338line4-Master.pro12/12/2007

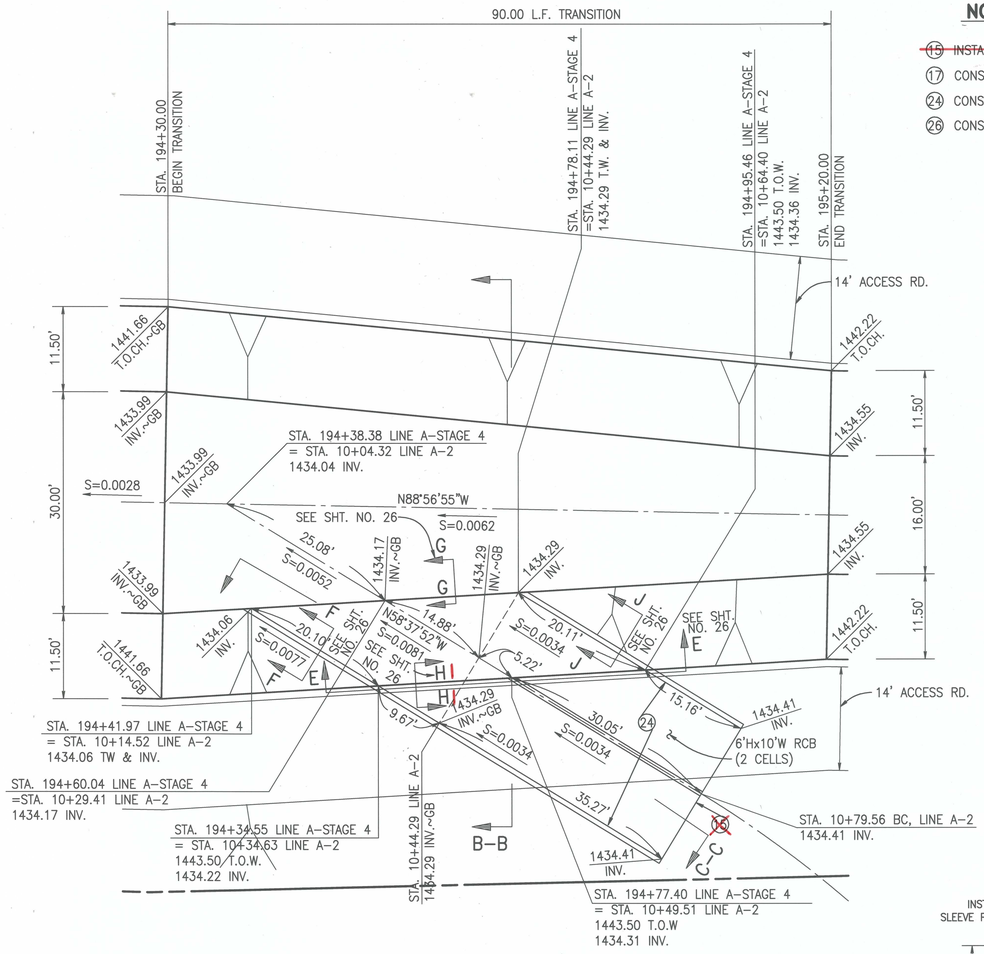
NOTES

~~(15) INSTALL CONCRETE BULKHEAD PER STD. M816 & DETAILS ON SHEET 26~~

(17) CONSTRUCT PARAPET WALL PER CALTRANS STD. D82, DETAIL ON SHEET NO. 23

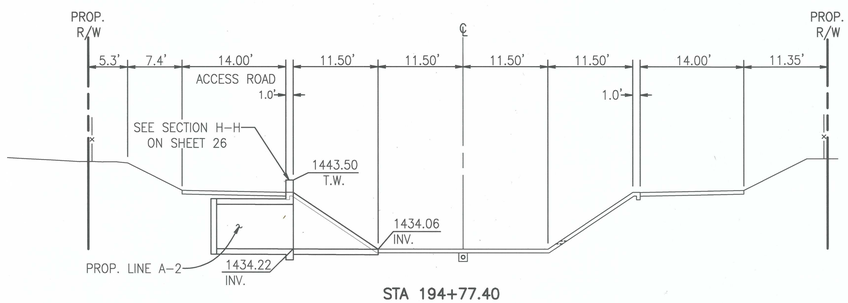
(24) CONSTRUCT 6.0'Hx10.0'W RCB (2 CELLS) PER CALTRANS STD. D81

(26) CONSTRUCT 6.5'Hx12.0'W RCB (SINGLE CELL) PER CALTRANS STD. D80



JUNCTION-LINE A-2 DETAIL

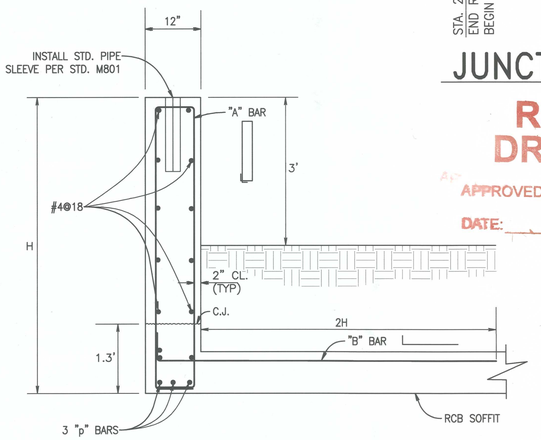
SCALE: 1"=10'
(SEE SHEET NO. 10)



STA 194+77.40

SECTION B-B

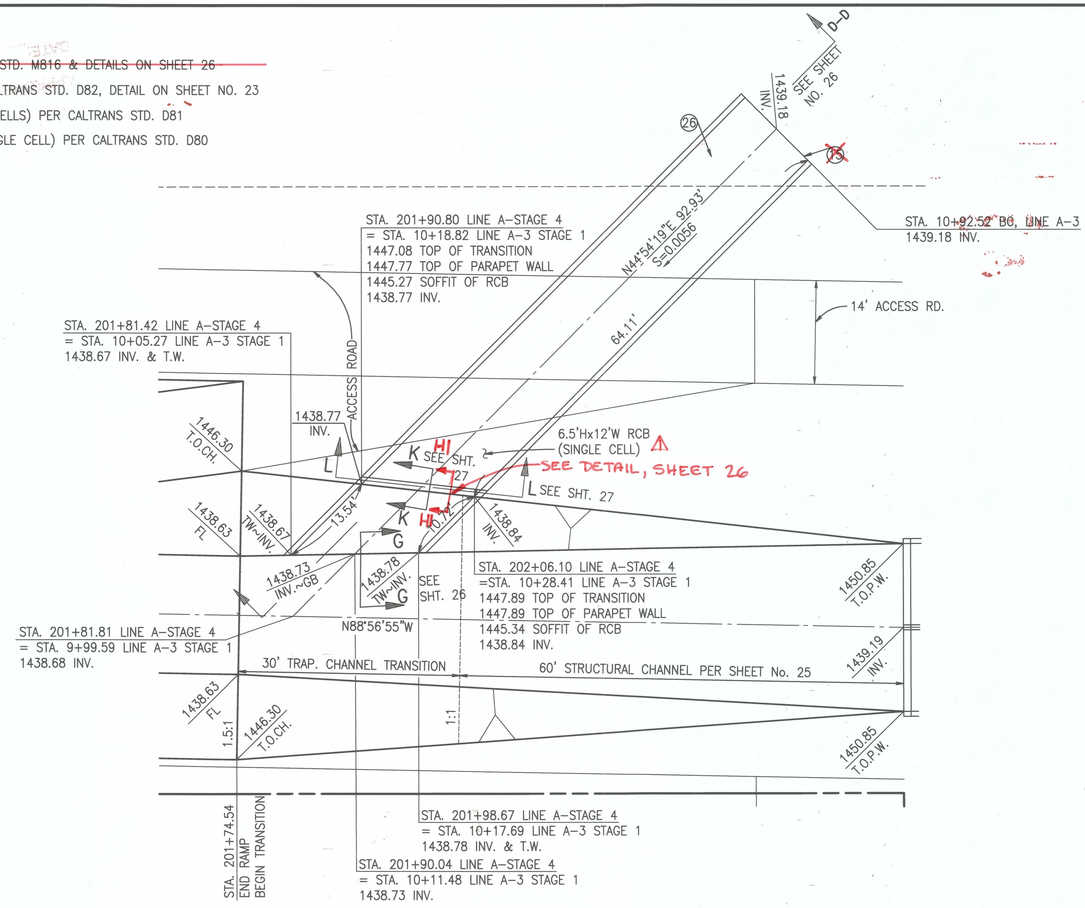
SCALE: 1"=10'



SEE REINFORCEMENT TABLE ON SHEET 27

(17) PARAPET WALL DETAIL

SEE SHTS. NOS. 2, 3, 5, 6, 8, 9, 10, 11



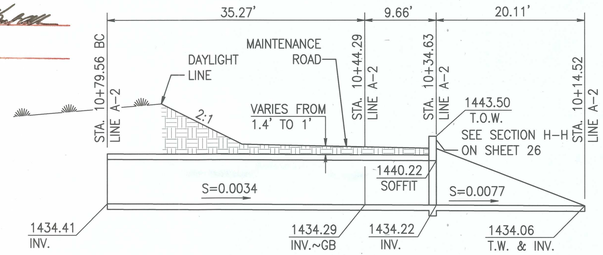
JUNCTION-LINE A-3 STAGE 1 DETAIL

SCALE: 1"=10'
(SEE SHEEET NO. 11)

RECORD DRAWINGS

APPROVED BY: Kendall Hardt

DATE: 2/9/17



SECTION C-C

SCALE: 1"=10'

IP050154 MS4051 ~~CALTRANS PERMIT No. 08-05-N-MC-0355~~

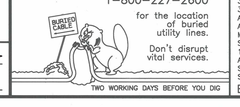
SCOTT R. HILDEBRANDT — REGISTERED PROFESSIONAL ENGINEER — NO. C44762 EXP. 3-31-08 — CIVIL — STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: [signature] DATE: ~~12-13-07~~

R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.



TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REVISIONS			
REF.	DESCRIPTION	APPR.	DATE
1	ADDED NOTES	[illegible]	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL: [signature] DATE: 12/21/07

APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
JUNCTION STRUCTURE DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 23 OF 31

26

G:\2003\03-0338\DWG&PRO\0338line4-Master.pro12/10/2007

DETAIL SCHEDULE

DATA	UPSTREAM ENCANTO DRIVE (SHEET NO. 2)				DOWNSTREAM TRUMBLE ROAD (SHEET NO. 3)			
STATION TO STATION	124+88.00 TO 125+18.00		125+18.00 TO 125+48.00		135+75.71 TO 136+00.71		136+00.71 TO 136+25.71	
X	25.00'	23.68'	23.68'	22.34'	22.34'	23.68'	23.68'	25.00'
Y	25.00'	29.46'	29.46'	32.48'	31.26'	28.76'	28.76'	25.00'
HEIGHT (H)	13.08'	11.61'	11.61'	10.14'	8.94'	10.21'	10.21'	11.48'
WALLS T_1	12"		12"		10.50"		10.50"	
BOTTOM SLAB T_2	12.50"		12.50"		11"		11"	
A BARS	#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.	
HORIZ. LENGTH	6.70'	6.70'	6.70'	6.70'	6.40'	6.40'	6.40'	6.40'
SLOPE LENGTH	13.71'	13.68'	13.68'	15.22'	13.35'	11.97'	11.97'	11.98'
B BARS	#7 BAR @ 12" O.C.		#7 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.	
HORIZ. LENGTH	27.47'	26.15'	26.15'	24.81'	24.45'	25.79'	25.79'	27.11'
SLOPE LENGTH	8.20'	9.17'	9.17'	11.60'	10.18'	8.05'	8.05'	7.20'
C BARS	#5 BAR @ 12" O.C.		#5 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
SLOPE LENGTH	13.71'	13.68'	13.68'	15.22'	13.35'	11.97'	11.97'	11.98'
D BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
HORIZ. LENGTH	26.77'	25.45'	25.45'	24.11'	23.99'	25.33'	25.33'	26.65'
CONCRETE C.Y./L.F.	3.0±	2.9±	2.9±	2.8±	2.4±	2.4±	2.4±	2.5±
STEEL LBS./L.F.	447±	447±	447±	470±	373±	356±	356±	356±

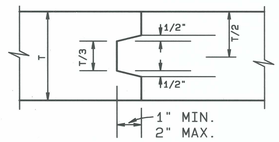
DATA	UPSTREAM TRUMBLE ROAD (SHEET NO. 3)				DOWNSTREAM SHERMAN ROAD (SHEET NO. 5)				UPSTREAM SHERMAN ROAD (SHEET NO. 5)			
STATION TO STATION	136+85.71 TO 137+10.71		137+10.71 TO 137+35.71		148+66.80 TO 148+91.80		148+91.80 TO 149+16.80		150+34.80 TO 150+59.80		150+59.80 TO 150+84.80	
X	25.00'	23.68'	23.68'	22.34'	22.34'	23.68'	23.68'	25.00'	25.00'	23.68'	23.68'	22.34'
Y	25.00'	28.73'	28.73'	31.23'	31.20'	28.70'	28.70'	25.00'	25.00'	28.60'	28.60'	31.09'
HEIGHT (H)	11.32'	10.10'	10.10'	8.89'	8.87'	10.08'	10.08'	11.28'	10.95'	9.86'	9.86'	8.76'
WALLS T_1	10.50"		10.50"		10.5"		10.5"		10.50"		10.50"	
BOTTOM SLAB T_2	11"		11"		11"		11"		11"		11"	
A BARS	#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.	
HORIZ. LENGTH	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'	6.40'
SLOPE LENGTH	11.82'	11.85'	11.85'	13.28'	13.25'	11.83'	11.83'	11.78'	11.45'	11.58'	11.58'	13.10'
B BARS	#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.	
HORIZ. LENGTH	27.11'	25.79'	25.79'	24.45'	24.45'	25.79'	25.79'	27.11'	27.11'	25.79'	25.79'	24.45'
SLOPE LENGTH	7.20'	8.05'	8.05'	10.18'	10.18'	8.05'	8.05'	7.20'	7.20'	8.05'	8.05'	10.18'
C BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
SLOPE LENGTH	11.82'	11.85'	11.85'	13.28'	13.25'	11.83'	11.83'	11.78'	11.45'	11.58'	11.58'	13.10'
D BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
HORIZ. LENGTH	26.65'	25.33'	25.33'	23.99'	23.99'	25.33'	25.33'	26.65'	26.65'	25.33'	25.33'	23.99'
CONCRETE C.Y./L.F.	2.5±	2.4±	2.4±	2.4±	2.4±	2.4±	2.4±	2.5±	2.5±	2.4±	2.4±	2.4±
STEEL LBS./L.F.	356±	355±	355±	372±	372±	355±	355±	355±	354±	354±	354±	371±

SPLICES

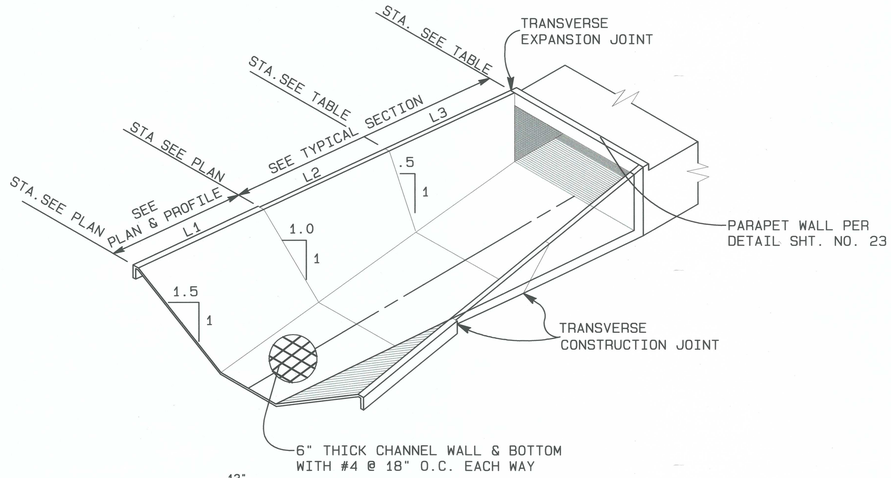
BAR	LENGTH	REMARKS
B	40"	ENCANTO DR. SPLICES (45 ø LAP)
D	22.5"	ENCANTO DR. SPLICES
B	34"	ALL SPLICES THIS SHEET EXCEPT ENCANTO DR.
D	22.5"	ALL SPLICES THIS SHEET EXCEPT ENCANTO DR.

DESIGN DATA

LIVE LOAD = 16000 LBS (TRUCK AXLE)
330 PSF (SLOPE SURCHARGE)
SOIL DENSITY = 120 PCF
ALLOWABLE STRESSES:
f'_c = 4000 PSI
f_c = 1800 PSI
f_y = 60,000 PSI
f_s = 24,000 PSI

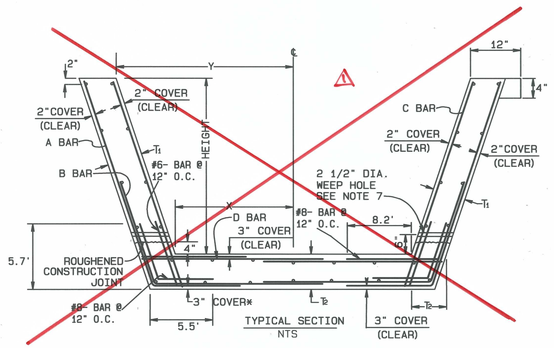


TRANSVERSE CONSTRUCTION JOINT
DETAIL A

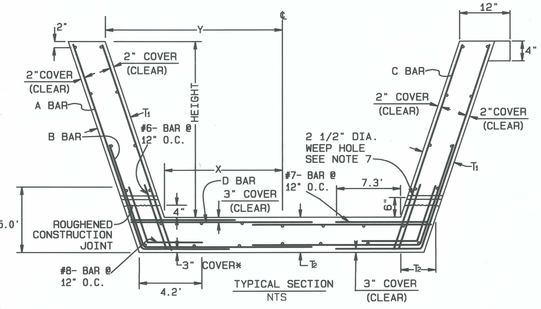


NOTES

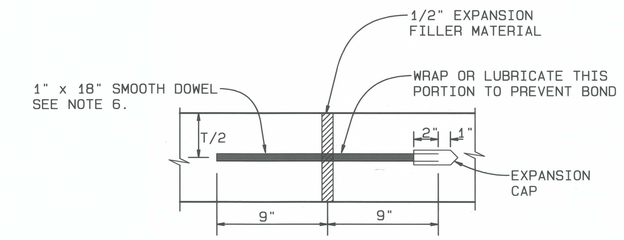
1. STRUCTURAL CONCRETE SHALL BE CLASS "A".
2. ALL LONGITUDINAL BARS SHALL BE #4 @ 18 INCHES. PLACE BARS IN BOTTOM SLAB SYMMETRICALLY ABOUT CENTERLINE. PLACE BARS IN WALLS STARTING AT TOP WITH 2 INCHES CLEAR COVER.
3. CLEAR COVER FOR STEEL SHALL BE 2 INCHES EACH FACE FOR WALLS AND 3 INCHES EACH FACE FOR BOTTOM SLAB.
4. STEEL IS DIMENSIONED TO BACK OF BAR BEND.
5. FOR CONSTRUCTION ON CURVES, STRAIGHT TRANSVERSE BARS IN THE SLAB SHALL BE ALIGNED RADIALLY WITH SPACING MEASURED AT WALLS. FOR L-BARS IN WALLS, SPACING SHALL BE MEASURED BETWEEN VERTICAL LEGS OF BARS.
6. ALL TRANSVERSE CONSTRUCTION JOINTS SHALL BE IN A VERTICAL PLANE NORMAL TO THE CENTERLINE. CONTINUOUS KEYWAYS SHALL BE CONSTRUCTED AS SHOWN IN DETAIL A. A COMPLETE CURTAIN OF TRANSVERSE STEEL SHALL BE PLACED 3 INCHES FROM EACH FACE OF THE JOINTS AND LONGITUDINAL STEEL WILL NOT BE CONTINUOUS THROUGH THE JOINTS. AN EXPANSION JOINT SHALL BE CONSTRUCTED BETWEEN THE REINFORCED CONCRETE TRANSITION AND REINFORCED CONCRETE BOX SECTIONS AS SHOWN DETAIL B. DOWELS SHALL BE PLACED AT 18 INCH SPACING CENTERED IN THE MIDDLE OF THE BOTTOM SLAB AND THE TOP THIRD OF SIDE WALLS. A MINIMUM OF 3 DOWELS PER SLAB AND WALLS SHALL BE PLACED.
7. WEEPHOLES SHALL BE FORMED IN BOTH WALLS PER STD. CH326 AT A SPACING OF 10 FEET.
8. ALL QUANTITIES SHOWN ARE APPROXIMATE.
9. ALL SPLICES ARE SUBJECT TO APPROVAL BY THE ENGINEER.
10. SECTION L1 PAY LIMIT PER STANDARD CH326.
11. T_1 SHOULD BE 12" OR LESS. IF T_1 IS LESS THAN 12", WIDEN TOP TO 12" AS SHOWN.



ENCANTO DRIVE DETAIL
N.T.S.



DETAIL FOR TRUMBLE RD. AND SHERMAN RD.
N.T.S.



TRANSVERSE EXPANSION JOINT
DETAIL B

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

IP050154 MS4051

27

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12/3/07
R.C.E. NO. C44762 EXP. DATE 3-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

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TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	DELETED DETAIL		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/26/07
APPROVED BY: DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
TRANSITION DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 24 OF 31

G:\2003\03-038\WORK\03838.tmp1-Master.dgn 12/11/2007

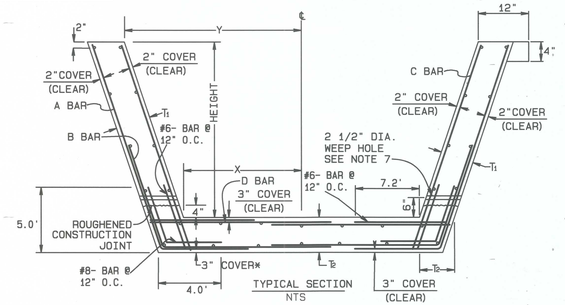
DETAIL SCHEDULE

DATA	DOWNSTREAM DAWSON ROAD (SHEET NO. 6)				UPSTREAM DAWSON ROAD (SHEET NO. 6)				DOWNSTREAM ANTELOPE ROAD (SHEET NO. 8)				UPSTREAM ANTELOPE ROAD (SHEET NO. 8)			
STATION TO STATION	161+85.86 TO 162+25.86		162+25.86 TO 162+65.86		163+25.86 TO 163+55.86		163+55.86 TO 163+85.86		175+15.71 TO 175+40.71		175+40.71 TO 175+65.71		176+65.71 TO 176+90.71		176+90.71 TO 177+15.71	
X	21.22'	21.44'	21.44'	21.67'	21.67'	19.45'	19.45'	17.22'	17.22'	19.45'	19.45'	21.67'	21.67'	19.45'	19.45'	17.22'
Y	29.96'	26.35'	26.35'	21.67'	21.67'	24.32'	24.32'	25.93'	26.21'	24.59'	24.59'	21.67'	21.67'	24.51'	24.51'	26.12'
HEIGHT	8.74'	9.82'	9.82'	10.89'	10.72'	9.70'	9.70'	8.68'	8.98'	10.30'	10.30'	11.62'	11.34'	10.11'	10.11'	8.89'
WALLS T_1	10"		10"		10"		10"		10"		10"		10"		10"	
BOTTOM SLAB T_2	11"		11"		11"		11"		11"		11"		11"		11"	
A BARS	#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.	
HORIZ. LENGTH	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'
SLOPE LENGTH	13.07'	11.54'	11.54'	11.39'	11.22'	11.40'	11.40'	12.98'	13.41'	12.07'	12.07'	12.12'	11.84'	11.86'	11.86'	13.28'
B BARS	#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.	
HORIZ. LENGTH	23.29'	23.51'	23.51'	23.74'	23.74'	21.52'	21.52'	19.29'	19.29'	21.52'	21.52'	23.74'	23.74'	21.52'	21.52'	19.29'
SLOPE LENGTH	9.90'	7.83'	7.83'	7.00'	7.00'	7.83'	7.83'	9.90'	9.90'	7.83'	7.83'	7.00'	7.00'	7.83'	7.83'	9.90'
C BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
SLOPE LENGTH	13.07'	11.54'	11.54'	11.39'	11.22'	11.40'	11.40'	12.98'	13.41'	12.07'	12.07'	12.12'	11.84'	11.86'	11.86'	13.28'
D BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
HORIZ. LENGTH	22.82'	23.04'	23.04'	23.27'	23.27'	21.05'	21.05'	18.82'	18.82'	21.05'	21.05'	23.27'	23.27'	21.05'	21.05'	18.82'
CONCRETE C.Y./L.F.	2.2±	2.2±	2.2±	2.2±	2.2±	2.0±	2.0±	2.0±	2.0±	2.1±	2.1±	2.2±	2.2±	2.1±	2.1±	2.0±
STEEL LBS./L.F.	355±	330±	330±	323±	323±	317±	317±	330±	332±	321±	321±	327±	326±	319±	319±	331±

DETAIL SCHEDULE

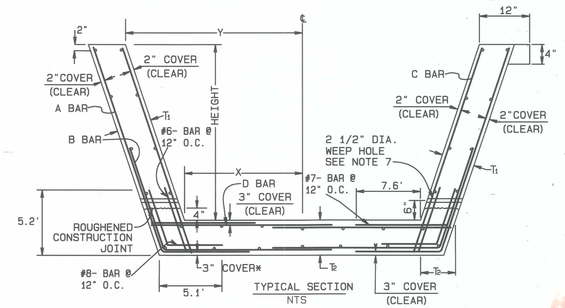
DATA	DOWNSTREAM SAN JACINTO ROAD (SHEET NO. 9)				UPSTREAM SAN JACINTO ROAD (SHEET NO. 9)				DOWNSTREAM PALOMAR ROAD (SHEET NO. 11)			
STATION TO STATION	188+67.28 TO 188+92.28		188+92.28 TO 189+17.28		189+77.28 TO 190+02.28		190+02.28 TO 190+27.28		202+04.54 TO 202+34.54		202+34.54 TO 202+64.54	
X	17.22'	19.45'	19.45'	21.67'	21.67'	19.45'	19.45'	17.22'	9.12'	10.22'	10.22'	11.33'
Y	26.12'	24.53'	24.53'	21.67'	21.67'	24.43'	24.43'	26.04'	18.11'	15.39'	15.39'	11.33'
HEIGHT	8.89'	10.13'	10.13'	11.36'	11.19'	10.02'	10.02'	8.84'	8.99'	10.33'	10.33'	11.66'
WALLS T_1	10"		10"		10"		10"		10.50"		10.50"	
BOTTOM SLAB T_2	11"		11"		11"		11"		11.50"		11.50"	
A BARS	#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.		#5 BAR @12" O.C.	
HORIZ. LENGTH	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.70'	5.90'	5.90'	5.90'	5.90'
SLOPE LENGTH	13.28'	11.88'	11.88'	11.86'	11.69'	11.76'	11.76'	13.21'	13.48'	12.15'	12.15'	12.20'
B BARS	#6 .BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.		#6 BAR @ 12" O.C.	
HORIZ. LENGTH	19.29'	21.52'	21.52'	23.74'	23.74'	21.52'	21.52'	19.29'	11.23'	12.33'	12.33'	13.44'
SLOPE LENGTH	9.90'	7.83'	7.83'	7.00'	7.00'	7.83'	7.83'	9.90'	10.32'	8.16'	8.16'	7.30'
C BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
SLOPE LENGTH	13.28'	11.88'	11.88'	11.86'	11.69'	11.76'	11.76'	13.21'	13.48'	12.15'	12.15'	12.20'
D BARS	#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.		#4 BAR @ 12" O.C.	
HORIZ. LENGTH	18.82'	21.05'	21.05'	23.27'	23.27'	21.05'	21.05'	18.82'	10.77'	11.87'	11.87'	12.98'
CONCRETE C.Y./L.F.	2.0±	2.1±	2.1±	2.2±	2.2±	2.1±	2.1±	2.0±	1.5±	1.5±	1.5±	1.6±
STEEL LBS./L.F.	331±	320±	320±	326±	325±	319±	319±	331±	300±	281±	281±	281±

SEE NOTES AND DETAILS ON SHEET NO. 24



DETAIL FOR DAWSON RD., ANTELOPE RD. AND SAN JACINTO RD.

N.T.S.



PALOMAR ROAD DETAIL

N.T.S.

RECORD DRAWINGS

APPROVED BY: Donald Kendall

DATE: 2/9/17

IP050154 MS4051

G:\2003\03-0338\(WO&PRO\03338lineA-Master.pro12/11/2007

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: [signature] DATE: 12-13-07

R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.

BURIED CABLE

TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN, A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES	[illegible]	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

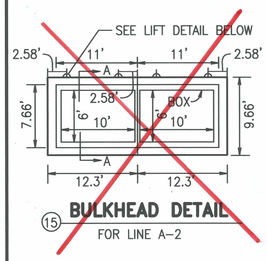
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: [signature] DATE: 12/21/07

APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

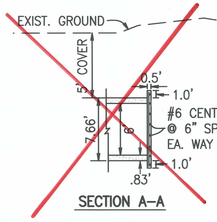
ROMOLAND MDP
LINE A - STAGE 4
TRANSITION DETAIL

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 25 OF 31



BULKHEAD DETAIL

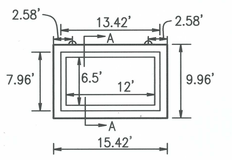
(15) FOR LINE A-2



SECTION A-A

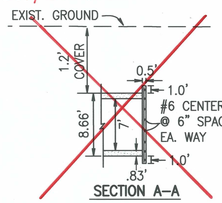
NOTE

EACH BULKHEAD SHALL ACCOMMODATE #4 LONGITUDINAK BARS FOR FUTURE 30" SPLICE

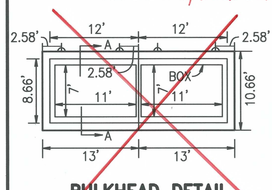


BULKHEAD DETAIL ⚠

(15) FOR LINE A-3, DWG. #4-871, STA 16+22



SECTION A-A

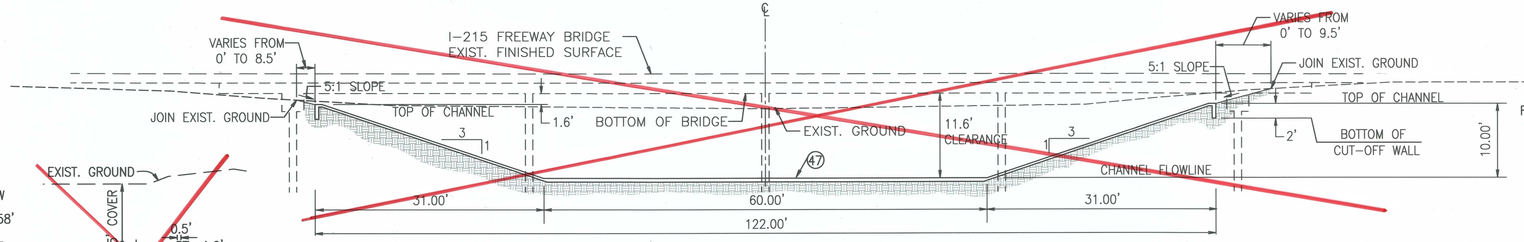


BULKHEAD DETAIL

(15) FOR LINE A STAGE-4 END

GRAPHIC SCALE 1"=10'

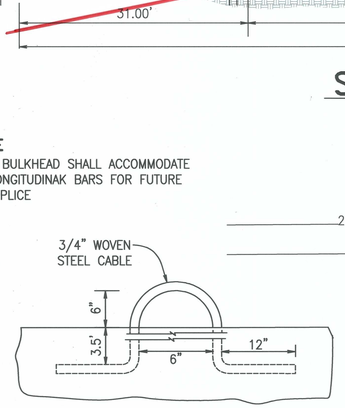
0 10 20 30



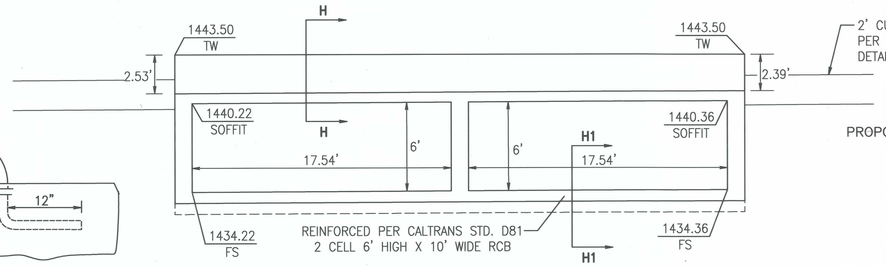
SECTION Z-Z

SCALE: 1" = 10'

SEE SHEET 2 AND 22



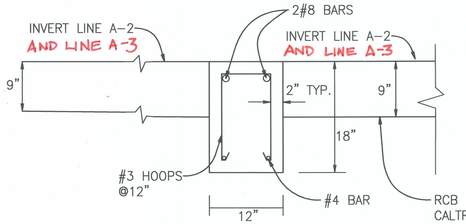
LIFT DETAIL
SCALE 1"=1'



SECTION E-E~LINE A-2

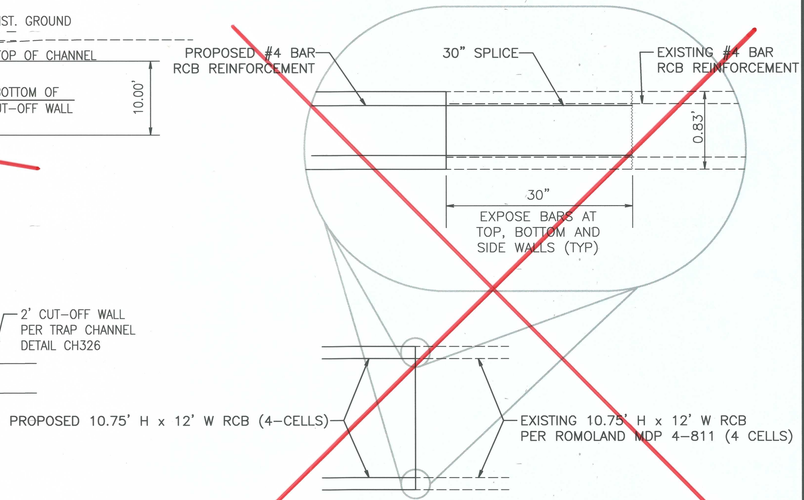
SCALE: 1" = 5'

SEE SHEET 23



SECTION H1- H1

SCALE: 1" = 2'



EXISTING-PROPOSED RCB JOIN DETAIL

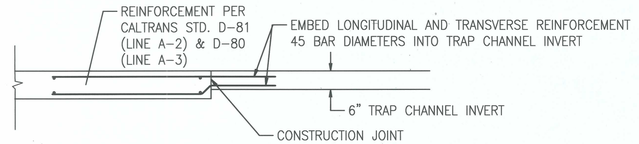
N.T.S.

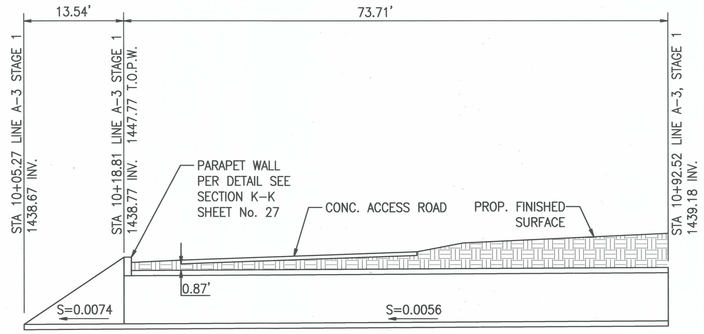
SEE SHEET 2

NOTES

(15) INSTALL CONCRETE BULKHEAD PER STD. M816

(47) CONSTRUCT TRAPEZOIDAL CHANNEL PER RCFCWCD STD DWG NO. 326, AS MODIFIED BY SECTION Z-Z ON SHEET NO. 26

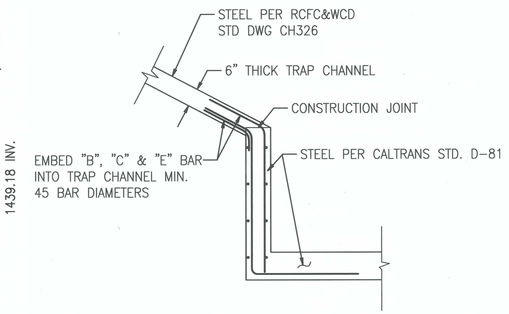




SECTION D-D

SCALE: 1"=10'

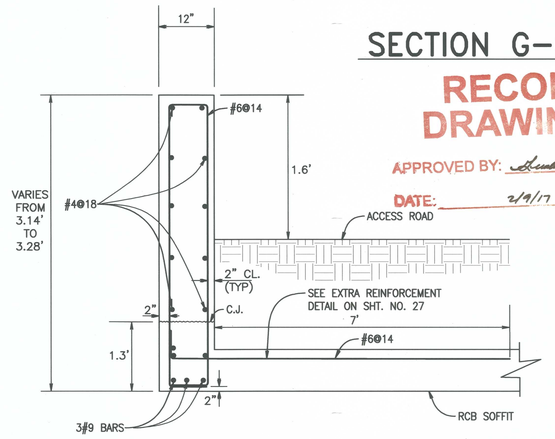
SEE SHEET 23



SECTION F-F

SCALE: 1" = 2'

SEE SHEET 23



SECTION G-G ~ LINE A-2 & LINE A-3

SCALE: 1" = 2'

SEE SHEET 23

RECORD DRAWINGS

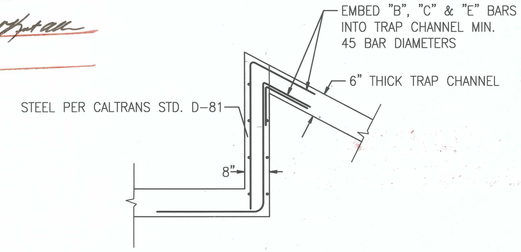
APPROVED BY: Stuart Knapp

DATE: 2/9/17

SECTION H-H ~ LINE A-2

N.T.S.

SEE SHEET 23



SECTION J-J

SCALE: 1" = 2'

SEE SHEET 23

IP050154 MS4051 ~~CALTRANS PERMIT No. 08-05-N-MC-0355~~

G:\2003\03-0338\DWG&PRO\03338line4-Master.pro12/10/2007

29

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: DATE: 12-13-07

R.C.E. NO. C44762 EXP. DATE 3-31-08

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRAND NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.

TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN, A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
⚠	ADDED NOTES		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

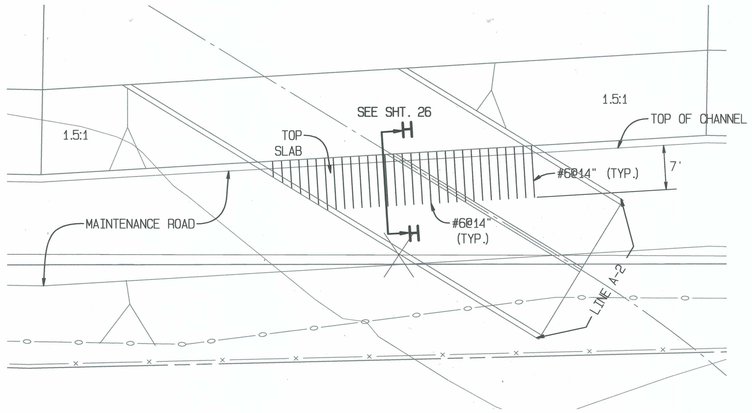
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07

APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

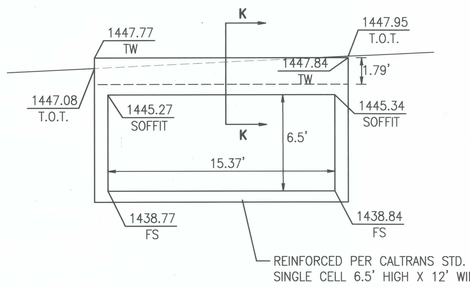
ROMOLAND MDP
LINE A - STAGE 4
SECTIONS & DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 26 OF 31



LINE A-2 EXTRA REINFORCEMENT DETAIL AT JUNCTION STRUCTURE WITH LINE A STAGE 4

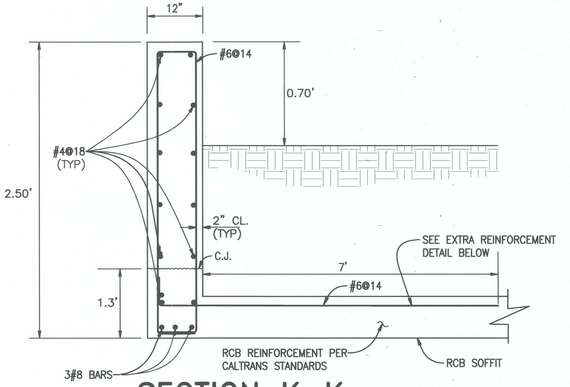
SCALE: 1" = 10'



SECTION L-L~LINE A-3 STAGE 1

SCALE: 1" = 5'

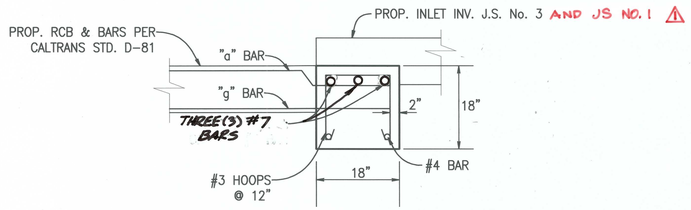
SEE SHEET No. 23



SECTION K-K

N.T.S.

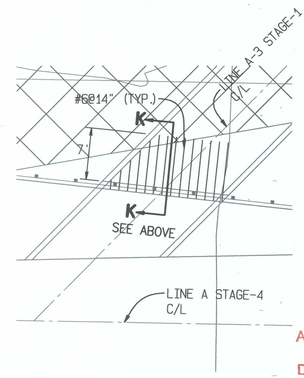
SEE SHEET No. 23 AND SECTION L-L AT LEFT



(59) SPECIAL BEAM DETAIL

N.T.S.

SEE SHEET NO. 20 AND 21

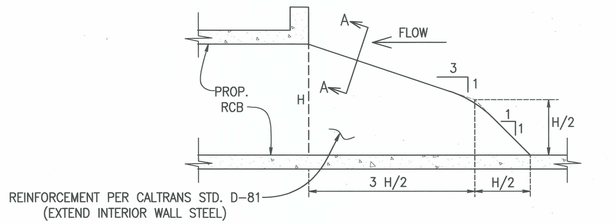


f'c= 4,000 psi
fy = 60,000 psi

CROSSING	"A" BAR	"B" BAR	"p" BAR	H	SPAN
ENCANTO DR. STA. 123+70.00	#5 @ 12	#5 @ 12	#7	5.66'	12.67'
ENCANTO DR. STA. 124+88.00	#5 @ 12	#5 @ 12	#7	5.33'	12.67'
TRUMBLE RD. STA. 136+25.71	#5 @ 12	#5 @ 12	#8	7.01'	12.67'
TRUMBLE RD. STA. 136+85.71	#5 @ 12	#5 @ 12	#8	~~6.48'~~ 6.85'	12.67'
SHERMAN RD. STA. 149+16.80	#5 @ 12	#5 @ 12	#8	6.78'	12.67'
SHERMAN RD. STA. 150+34.80	#5 @ 12	#5 @ 12	#8	6.45'	12.67'
DAWSON RD. STA. 162+65.86	#5 @ 12	#5 @ 12	#9	6.39'	14.69'
DAWSON RD. STA. 163+25.86	#5 @ 12	#5 @ 12	#9	6.22'	14.69'
ANTELOPE RD. STA. 175+65.71	#5 @ 12	#5 @ 12	#9	6.62'	14.69'
ANTELOPE RD. STA. 176+65.71	#5 @ 12	#5 @ 12	#9	6.34'	14.69'
SAN JACINTO RD. STA. 189+17.28	#5 @ 12	#5 @ 12	#9	6.86'	14.69'
SAN JACINTO RD. STA. 189+77.28	#5 @ 12	#5 @ 12	#9	6.69'	14.69'
PALOMAR RD. STA. 202+64.54	#5 @ 12	#5 @ 12	#7	7.66'	11.67'

PARAPET WALL REINFORCEMENT TABLE

SEE SHEET NO. 23



(58) NOSE DETAIL

SCALE: 1" = 4'

RECORD DRAWINGS

APPROVED BY: [signature]

DATE: 2/9/17

LINE A-3 EXTRA REINFORCEMENT DETAIL AT JUNCTION STRUCTURE WITH LINE A STAGE 4

SCALE: 1" = 10'

IP050154 MS4051

G:\2003\03-0338\DWG&PRO\03338lineA-Master.pro12/11/2007

30

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: [signature] DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MEINFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

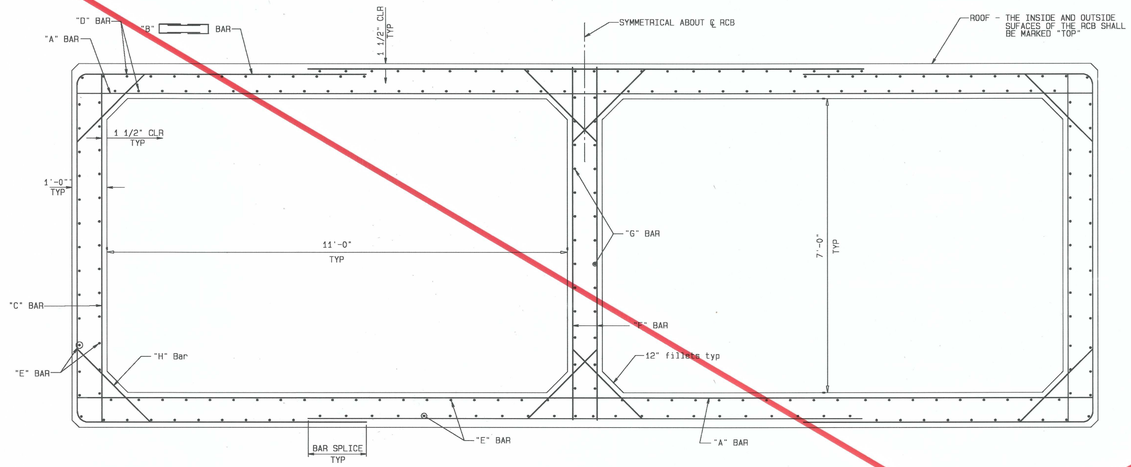
REF.	REVISIONS	APPR.	DATE
1	ADDED NOTES	[illegible]	2/9/17
2	REVISED TABLE	[illegible]	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: [signature] DATE: 12/24/07
APPROVED BY: [signature] DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
SECTIONS & DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 27 OF 31

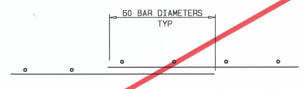


TYPICAL SECTION

NO SCALE

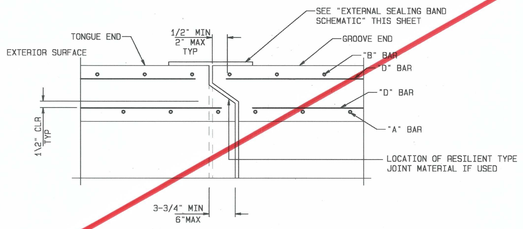
REINFORCING TABLE

BAR	
"A"	#5 @ 7"
"B"	#6 @ 8"
"C"	#5 @ 11"
"D"	#4 @ 8"
"E"	#4 @ 16"
"F"	#4 @ 10"
"G"	#4 @ 9"
"H"	#4 @ 6"



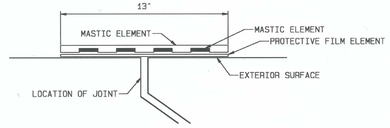
BAR SPLICE DETAIL

NO SCALE



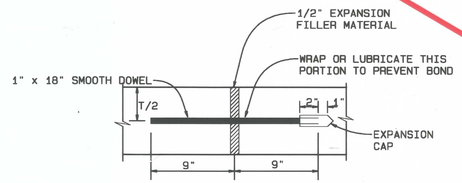
END JOINT DETAIL AT TOP

NO SCALE



EXTERNAL SEALING BAND SCHEMATIC

NO SCALE



TRANSVERSE EXPANSION JOINT

NO SCALE

12/7/07
DATE

REGISTERED PROFESSIONAL ENGINEER
CURTISS W. GILLEY
No. 14434
Exp. 3-31-09
CIVIL
STATE OF CALIFORNIA

REGISTER CIVIL ENGINEER

DESIGN DATA

DESIGN: BRIDGE DESIGN SPECIFICATIONS (1983 AASHTO WITH INTERIMS AND REVISIONS BY CALTRANS)
DEPTH OF COVER IS ASSUMED TO BE UNIFORM

EARTH LOAD: EARTH PRESSURES FOR TWO CONDITIONS
130 LB/CF VERT, 36.75 LB/CF HORIZ
130 LB/CF VERT, 130 LB/CF HORIZ

LIVE LOAD: COOPER E80

UNIT STRESSES: $f'c$ = 5000 PSI
fy = 60,000 PSI

SHEAR: MAXIMUM ALLOWABLE SHEAR, $V = 3\sqrt{f'c}$ PSI

COVER: 2.8 FEET

CONSTRUCTION NOTES

CONSTRUCTION LOADS:
STRUTTING MAY BE REQUIRED NEAR TEMPORARY ENDS. FOR CONSTRUCTION LOADS ON CULVERTS, SEE STANDARD PLAN D88.

SHOP PLAN:
CONTRACTOR SHALL SUBMIT SHOP PLANS FOR PRECAST REINFORCED CONCRETE BOX.TO RCFC&WCD, RCTC, AND ENGINEER OF RECORD.

NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

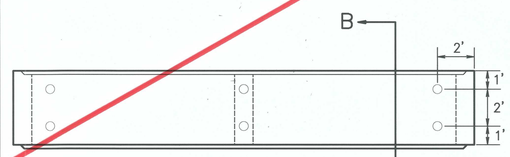
PRECAST SEGMENTS ADJACENT TO CAST-IN-PLACE ELEMENTS SHALL BE CONNECTED USING TRANVERSE EXPANSION JOINT DETAILED HEREON. DOWELS SHALL BE PLACED AT 18 INCH SPACING CENTERED IN THE MIDDLE OF THE BOTTOM SLAB AND THE TOP THIRD OF SIDE WALLS. A MINIMUM OF 3 DOWELS PER SLAB AND WALLS SHALL BE PLACED.

TERRAIN ENGINEERING
3609 MAIDU PLACE
DAVIS, CA 95618
Tel 916.952.0704
Fax 530.456.2122

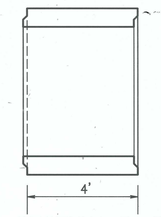
ROMOLAND MDP-LINE A, STAGE 4
DOUBLE 11x7 PRECAST RCB
@ BNSF/MTA CROSSING

DATE: December 2006

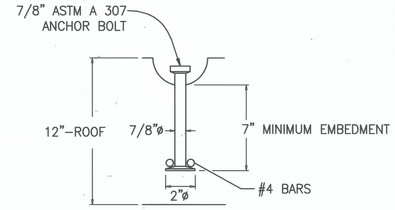
PROJECT NO. 4-0-00431
DRAWING S-1
SHT 1 OF 1



PLAN VIEW



SECTION B-B



6-TON ANCHOR DETAIL

RECORD DRAWINGS

APPROVED BY: Stuart E. Tickle

DATE: 2/9/17

NOTE: THE CONTRACTOR SHALL PLACE A 12" LAYER OF COMPACTED GRANULAR MATERIAL ON TOP OF A LAYER OF GEOTEXTILE FABRIC AT THE BOTTOM OF THE PRECAST SECTION BOX PER BNSF REQUIREMENTS

SEE SHEET 12 FOR PLAN VIEW

IP050154 MS4051 CALTRANS PERMIT No. 08-05-N-MC-0355

REGISTERED PROFESSIONAL ENGINEER
SCOTT R. HILDEBRAND
NO. C44762
EXP. 3-31-08
CIVIL
STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: DATE: 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEXA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	DELETED SHEET	stke	2/9/17

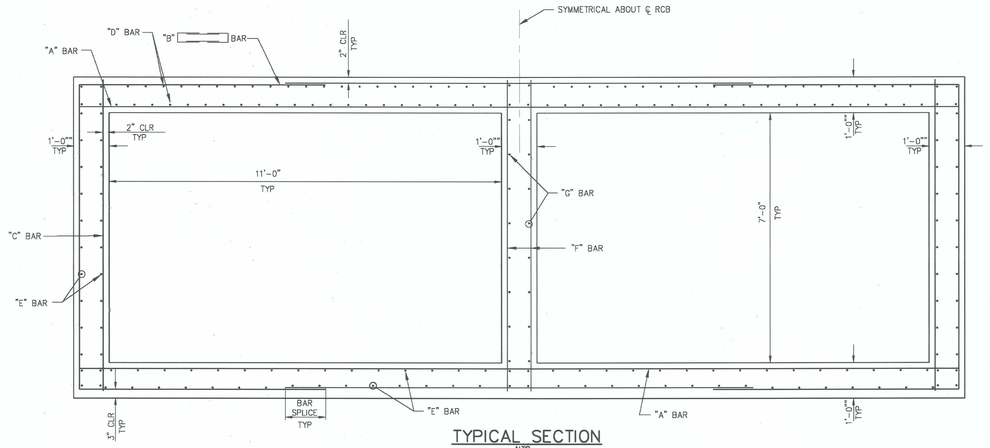
DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07
APPROVED BY: Stuart E Tickle DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
PRE-CAST RCB DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 28 OF 31

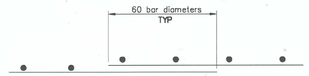
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TYPICAL SECTION
NTS

RAIL CROSSING REINFORCING TABLE

BAR	
"A"	#10 @ 6
"B"	#10 @ 6
"C"	#9 @ 6
"D"	#7 @ 6
"E"	#4 @ 9
"F"	#5 @ 11
"G"	#5 @ 11



BAR SPLICE DETAIL
NO SCALE

DESIGN DATA

DESIGN: BRIDGE DESIGN SPECIFICATIONS (1983 AASHTO WITH INTERIMS AND REVISIONS BY CALTRANS)
DEPTH OF COVER IS ASSUMED TO BE UNIFORM

EARTH LOAD: EARTH PRESSURES FOR TWO CONDITIONS
140 LB/CF VERT, 42 LB/CF HORIZ
140 LB/CF VERT, 140 LB/CF HORIZ
MIN. FILL HEIGHT = 2.0 FT

LIVE LOAD: COOPER E80 PER AREMA 2.3.3

UNIT STRESSES: f'_c = 5000 PSI
f_y = 60,000 PSI

SHEAR: MAXIMUM ALLOWABLE SHEAR, V = 3 $\sqrt{f'_c}$ PSI

CONSTRUCTION NOTES

CUTOFF WALLS:
4' CUTOFF WALLS ARE TO BE PROVIDED AT INLET AND/OR OUTLET UNLESS CHANNEL IS LINED AND UNLESS OTHERWISE SHOWN. THESE WALLS ARE TO BE EXTENDED IF SCOUR CONDITIONS WARRANT. SEE STANDARD PLANS D84, D85, AND D86A.

WINGWALLS:
WINGWALLS SHALL BE CAST-IN-PLACE AND SHALL CONFORM TO STANDARD PLAN DETAILS FOR BOX CULVERT WINGWALLS. SEE STANDARD PLANS D84, D85 AND D86A.

CONSTRUCTION LOADS:
STRUTTING MAY BE REQUIRED NEAR TEMPORARY ENDS. FOR CONSTRUCTION LOADS ON CULVERTS, SEE STANDARD PLAN D88.

REINFORCEMENT :
TRANSVERSE REINFORCEMENT TO BE PLACED PERPENDICULAR TO CENTER LINE OF RCB. LONGITUDINAL REINFORCEMENT TO BE PLACED PARALLEL TO CENTER LINE OF RCB. RAIL SECTION LONGITUDINAL REINFORCEMENT SHALL EXTEND 3'-0" BEYOND THE RAIL CROSSING SECTION.

NOTE: THE CONTRACTOR SHALL VERIFY ALL CONTROLLING FIELD DIMENSIONS BEFORE ORDERING OR FABRICATING ANY MATERIAL.

FOR LIMITS OF RAIL CROSSING SECTION SEE CIVIL SHEET 28A

SEPTEMBER 11, 2014
DATE

REGISTERED PROFESSIONAL ENGINEER
CURTISS W. GILLEY
No. 14434
Exp. 3-31-15
CIVIL
STATE OF CALIFORNIA

REGISTER CIVIL ENGINEER

TERRAIN ENGINEERING
3609 MAIDU PLACE
DAVIS, CA 95618
Tel 916.952.0704
Fax 530.456.2722

ROMOLAND MDP-LINE A, STAGE 4
DOUBLE 11x7 RCB
@ METROLINK (SCRRA) CROSSING-MILE POST 24.2
DATE: SEPTEMBER 2014

PROJECT NO. 4-0-00431
DRAWING S-1
SHT 1 OF 1

SEE SHEET 12 FOR PLAN VIEW

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

REGISTERED PROFESSIONAL ENGINEER
JOSEPH CHRISTIAN CALDWELL
NO. C67239
CIVIL
STATE OF CALIFORNIA

32

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 24SEP 14
R.C.E. NO. C67239 EXP. DATE 09-30-16

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
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PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE

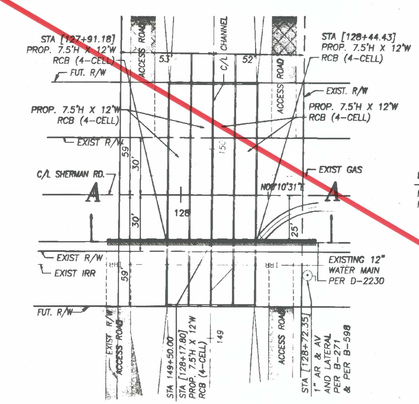
DESIGNED BY: E.T.M
DRAWN BY: E.T.M
DATE DRAWN: SEP 2014
CHECKED BY: C.G.

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL BY: DATE: 9/25/2014
APPROVED BY: DATE: 25 Sept 2014

ROMOLAND MDP
LINE A - STAGE 4
RCB DETAILS

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 28A OF 31

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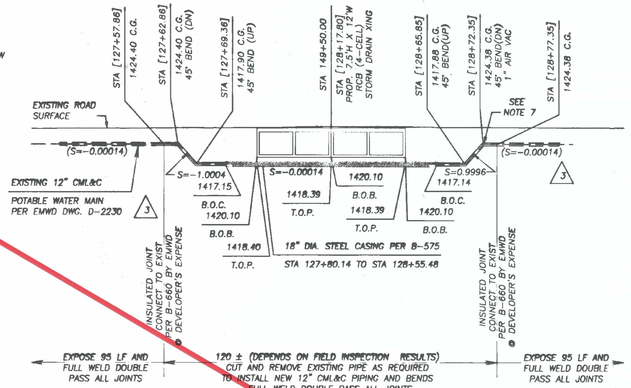


PLAN

1"=40'

STA= STREET STATIONING
BOB= BOTTOM OF BOX
BOC= BOTTOM OF CASING
INV= INVERT
NTS= NOT TO SCALE
TOP= TOP OF PIPE
149+50 STATION PER SHERMAN ROAD RCB
[128+00] STATION PER EMWD DWG. D-2230

7
1"=40'



SECTION "A-A"

NOT TO SCALE

NOTES:

1. 12" CML&C OFFSET TO BE FULLY WELDED DOUBLE PASS EACH JOINT
2. FABRICATION TO CONFORM TO AWWA C-200 AND EMWD SPECIFICATIONS
3. SHOP DRAWINGS MUST BE SUBMITTED PRIOR TO FABRICATION FOR EMWD APPROVAL
4. 48 HOURS NOTICE IS REQUIRED BEFORE FABRICATION FOR INSPECTION
5. C.G. = CENTER GRADE OF WATER LINE
6. TIE-IN LOCATIONS AND PIPE O.D. TO BE POT-HOLED AND VERIFIED PRIOR TO FABRICATION
7. INSTALL 1" OUTLET PER STANDARD PLAN B-271 FOR 1" AIR VAC PER B-598
8. CONNECTIONS TO EXISTING WATER LINE TO BE DONE BY EMWD @ DEVELOPERS EXPENSE CONTRACTOR TO SUPPLY ALL MATERIAL.

3 RELOCATE WTR AT STA. 127+57.86 TO 128+77.35 (D-2230)

W.O. 11-579 C.O.

NO.	DATE	REVISIONS DESCRIPTION	APP'D	DATE

APPROVALS	INITIAL	DATE
DESIGN	JNP	10/19/06
CONSTRUCTION		
INSPECTION		
OPERATIONS		
SUBMITTED		

REFERENCES: DWGS. D-2230
SCALE: 1" = 40'
DRAWN BY: AWA

REGISTERED CIVIL ENGINEER — NO. C44762 EXP. 3-31-06 — CIVIL — STATE OF CALIFORNIA — 10-19-06

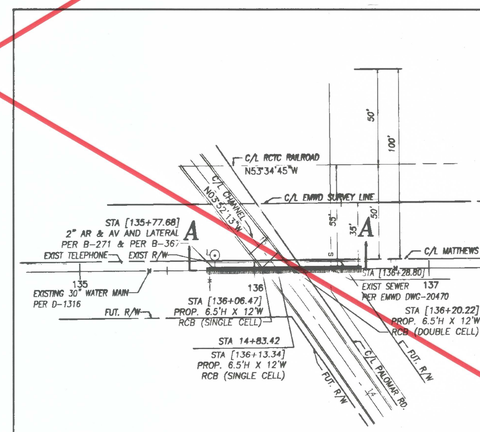
EASTERN MUNICIPAL WATER DISTRICT
RIVERSIDE COUNTY, CALIFORNIA

12" CML & C MODIFICATION
SHERMAN ROAD
STA. 127+57.86 TO 128+77.35

APPROVED: Joseph A. Matthews 10/19/06 SK-1127

SHERMAN ROAD 12" WATER LINE CROSSING
E.M.W.D. REFERENCE PLAN D-2230
SEE SHEETS 5 AND 14

MATTHEWS RD./BNSF/RCTD 30" WATER LINE CROSSING
E.M.W.D. REFERENCE PLAN D-1316
SEE SHEETS 12 AND 19

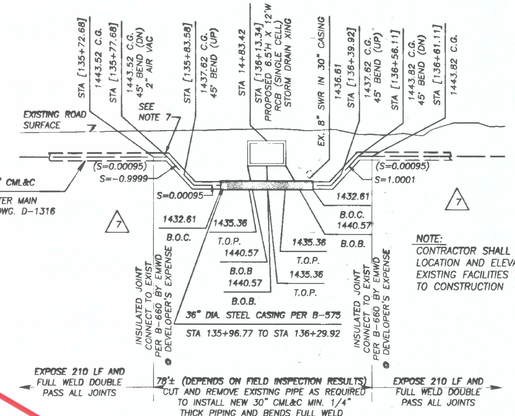


PLAN

1"=40'

STA= STREET STATIONING
BOB= BOTTOM OF BOX
BOC= BOTTOM OF CASING
BOS= BOTTOM OF SEWER
INV= INVERT
NTS= NOT TO SCALE
TOP= TOP OF PIPE
14+50 STATION PER RCTC RAILROAD STORM DRAIN
[136+00] STATION PER EMWD DWG. D-1316

1"=40'



NOTE:
CONTRACTOR SHALL VERIFY EXACT LOCATION AND ELEVATION OF ALL EXISTING FACILITIES PRIOR TO CONSTRUCTION

SECTION "A-A"

NOT TO SCALE

NOTES:

1. 30" CML&C OFFSET TO BE FULLY WELDED DOUBLE PASS EACH JOINT
2. FABRICATION TO CONFORM TO AWWA C-200 AND EMWD SPECIFICATIONS
3. SHOP DRAWINGS MUST BE SUBMITTED PRIOR TO FABRICATION FOR EMWD APPROVAL
4. 48 HOURS NOTICE IS REQUIRED BEFORE FABRICATION FOR INSPECTION
5. C.G. = CENTER GRADE OF WATER LINE
6. TIE-IN LOCATIONS AND PIPE O.D. TO BE POT-HOLED AND VERIFIED PRIOR TO FABRICATION
7. INSTALL 2" OUTLET PER STANDARD PLAN B-271 FOR 2" AIR VAC PER B-367
8. CONNECTIONS TO EXISTING WATER LINE TO BE DONE BY EMWD @ DEVELOPERS EXPENSE CONTRACTOR TO SUPPLY ALL MATERIAL.

7 RELOCATE WTR AT STA. 135+72.68 TO 136+61.11 (D-1316)

W.O. 11-579 C.O.

NO.	DATE	REVISIONS DESCRIPTION	APP'D	DATE

APPROVALS	INITIAL	DATE
DESIGN	JNP	10/19/06
CONSTRUCTION		
INSPECTION		
OPERATIONS		
SUBMITTED		

REFERENCES: DWGS. D-1316
SCALE: 1" = 40'
DRAWN BY: AWA

REGISTERED CIVIL ENGINEER — NO. C44762 EXP. 3-31-06 — CIVIL — STATE OF CALIFORNIA — 10-19-06

EASTERN MUNICIPAL WATER DISTRICT
RIVERSIDE COUNTY, CALIFORNIA

30" CML & C MODIFICATION
SURVEY LINE (20'S & R.R.)
STA. 135+72.68 TO 136+61.11

APPROVED: Joseph A. Matthews 10/19/06 SK-1121

RECORD DRAWINGS
APPROVED BY: Stuart E. McKibben
DATE: 2/9/17

REGISTERED PROFESSIONAL ENGINEER — SCOTT R. HILDEBRANDT — NO. C44762 EXP. 3-31-08 — CIVIL — STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: Scott R. Hildebrandt DATE: 2-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free
1-800-227-2600
for the location of buried utility lines.
Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS DESCRIPTION	APPR.	DATE
⚠	DELETED SHEET		2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

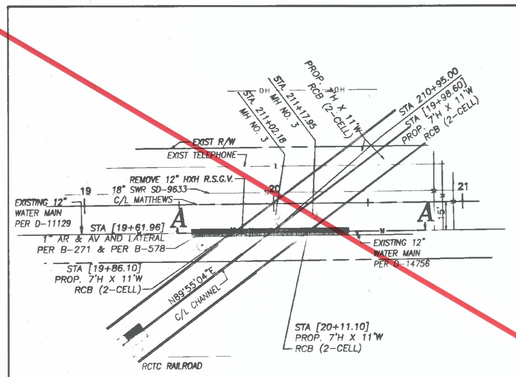
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE: 12/21/07
APPROVED BY: Stuart E. McKibben DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
WATER CROSSINGS
(SHERMAN RD. AND MATTHEWS RD./BNSF/RCTD)

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 29 OF 31

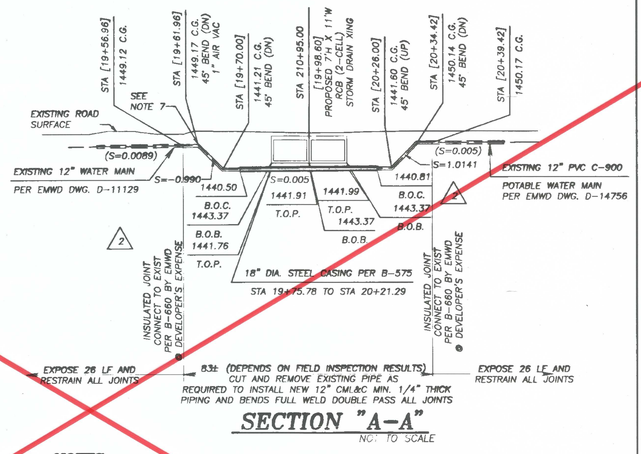
33

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PLAN

1"=40'



SECTION "A-A"

NO. TO SCALE

1"=40'

STA= STREET STATIONING
BOB= BOTTOM OF BOX
BOC= BOTTOM OF CASING
INV= INVERT
NTS= NOT TO SCALE
TOP= TOP OF PIPE
210+90 STATION PER MATTHEWS ROAD STORM DRAIN
[20+00] STATION PER EMWD DWG. D-14756

NOTES:

1. 12" PVC OFFSET TO BE FULLY WELDED DOUBLE PASS EACH JOINT
2. FABRICATION TO CONFORM TO AWWA C-200 AND EMWD SPECIFICATIONS
3. SHOP DRAWINGS MUST BE SUBMITTED PRIOR TO FABRICATION FOR EMWD APPROVAL
4. 48 HOURS NOTICE IS REQUIRED BEFORE FABRICATION FOR INSPECTION
5. C.G. = CENTER GRADE OF WATER LINE
6. TIE-IN LOCATIONS AND PIPE O.D. TO BE POT-HOLED AND VERIFIED PRIOR TO FABRICATION
7. INSTALL 1" OUTLET PER STANDARD PLAN B-271 FOR 1" AIR VAC PER B-598
8. CONNECTIONS TO EXISTING WATER LINE TO BE DONE BY EMWD @ DEVELOPERS EXPENSE CONTRACTOR TO SUPPLY ALL MATERIAL.

2 RELOCATE WTR AT STA. 19+54.56 TO 20+53.25 (D-14756)

W.O. 11-579 C.O.

REVISIONS			APPROVALS	
NO.	DATE	DESCRIPTION	APP'D	DATE
			DESIGN	INITIAL JCP
			CONSTRUCTION	DATE 10/19/06
			INSPECTION	
			OPERATIONS	
			SUBMITTED	

REFERENCES: DWGS. D-14756 & D-11129

SCALE: 1" = 40'
DRAWN BY: AWA

REGISTERED CIVIL ENGINEER — JOSEPH C. MCGRATH — NO. C44762 EXP. 3-31-08 — STATE OF CALIFORNIA — 10/19/06

EASTERN MUNICIPAL WATER DISTRICT
RIVERSIDE COUNTY, CALIFORNIA

12" PVC C-900 MODIFICATION
MATTHEWS ROAD
STA. 19+54.56 TO 20+53.25

APPROVED: Joseph C. McGrath INLET SLEE N 10/19/06 SK-7126

MATTHEWS RD. 12" WATER LINE CROSSING
E.M.W.D. REFERENCE PLAN D-14756
SEE SHEETS 12 AND 19

RECORD DRAWINGS
APPROVED BY: [signature]
DATE: 2/9/17

G:\2003\03-0338\DWG\PRO\033381.net-Hester.pro12/11/2007

34

REGISTERED PROFESSIONAL ENGINEER — SCOTT R. HILDEBRANDT — NO. C44762 EXP. 3-31-08 — CIVIL — STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070

PREPARED BY: [signature] DATE 12-13-07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
BURIED CABLE
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND, 72 FT. E OF MILEPOST 8, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

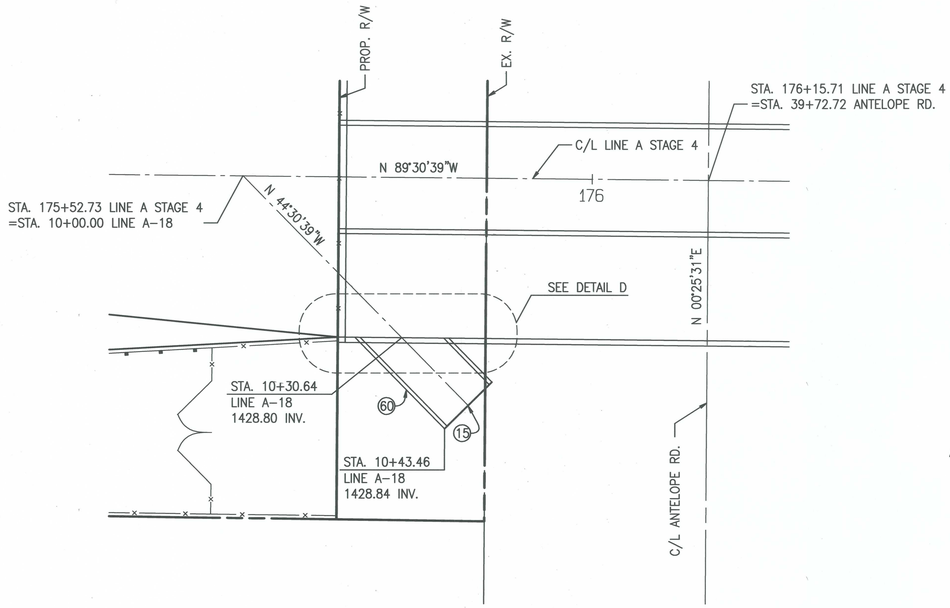
REVISIONS			
REF.	DESCRIPTION	APPR.	DATE
1	DELETED SHEET	JCP	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
RECOMMENDED FOR APPROVAL: DATE:
APPROVED BY: DATE:

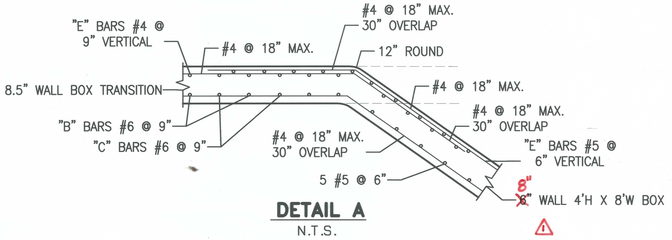
ROMOLAND MDP
LINE A - STAGE 4
WATER CROSSING (MATTHEWS RD.)

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 30 OF 31



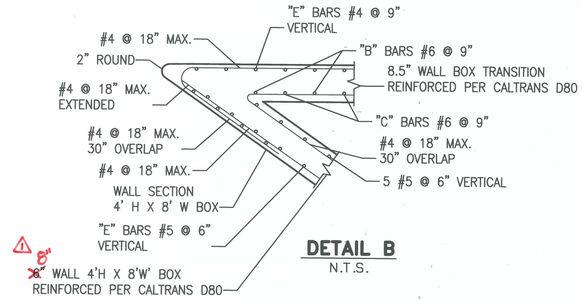
LINE A-18 PROFILE

SEE SHEET 8



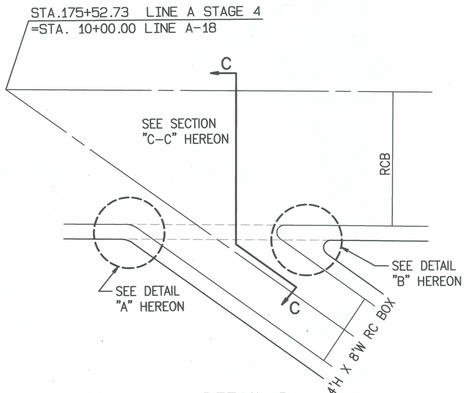
DETAIL A

N.T.S.



DETAIL B

N.T.S.



DETAIL D

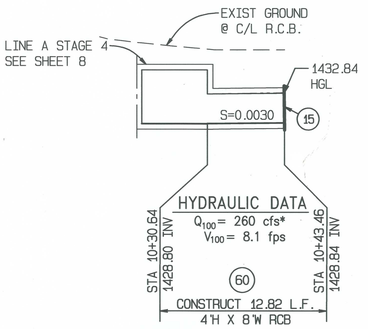
JUNCTION STRUCTURE RC BOX TO RC BOX DETAIL

N.T.S.

NOTES

(15) INSTALL CONCRETE BULKHEAD PER RCFC & WCD STD. DWG. MB16 AND DETAIL HEREON

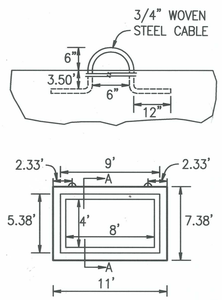
(60) CONSTRUCT 4'H X 8'W RCP PER CALTRANS STD. DWG. D80



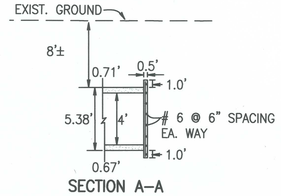
LINE A-18 PROFILE

N.T.S.

* INTERIM FLOW FROM HALL AND FORMAN FOR TRACT 29777



4'H x 8'W RCB

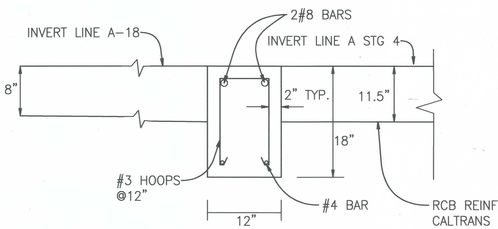


SECTION A-A

BULKHEAD DETAIL

(15)

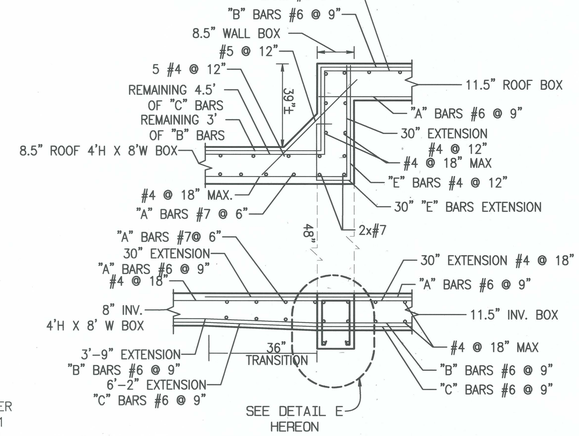
N.T.S.



EDGE BEAM SHALL BE CONSTRUCTED LONGITUDINALLY ALONG THE MAIN LINE FOR ENTIRE WIDTH OF BOX OPENING PLUS ONE FOOT ON EACH SIDE.

DETAIL E

1"=1'



SECTION C-C

N.T.S.

RECORD DRAWINGS

APPROVED BY: Stuart E. McKibbin

DATE: 2/9/17

REGISTERED PROFESSIONAL ENGINEER SCOTT R. HILDEBRANDT NO. C44762 EXP. 3-31-08 CIVIL STATE OF CALIFORNIA

ALBERT A. WEBB ASSOCIATES
3788 McCRAY ST.
RIVERSIDE, CA. 92506
PH. (951) 686-1070
PREPARED BY: DATE: 12/3/07
R.C.E. NO. C44762 EXP. DATE 3-31-08

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

PERMANENT BENCH MARK
B.M. NO. S 327-1935
3.9 MI. NW FROM WINCHESTER
3.9 MI. NW ALONG THE ATCHISON,TOPEKA AND SANTA FE RAILWAY FROM THE STATION AT WINCHESTER, RIVERSIDE COUNTY, AT MENIFEE SIDING, 198 YRDS. NW OF THE SE SWITCH STAND. 72 FT. E OF MILEPOST 6, 16.5 FT. NE OF THE CENTERLINE OF THE TRACK, AND 4.5 FT. NE OF THE STATION SIGN. A STANDARD DISK, STAMPED R 327 1935 AND SET IN THE TOP OF A CONCRETE POST.
ELEVATION: 1478.07

REF.	REVISIONS	APPR.	DATE
1	REVISED WALL THICKNESS	MR	2/9/17

DESIGNED BY: J.C.
DRAWN BY: R.R.
DATE DRAWN: NOV.-2007
CHECKED BY:

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

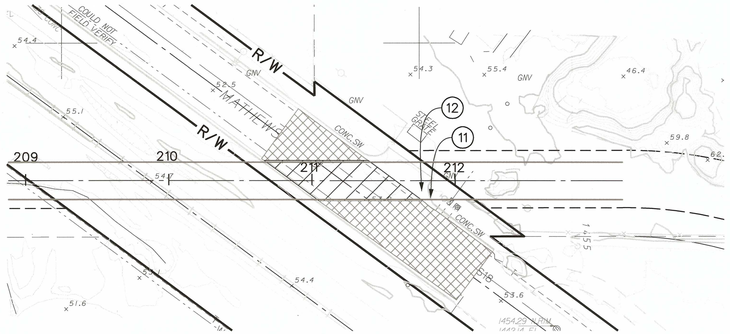
RECOMMENDED FOR APPROVAL BY: DATE: 12/21/07

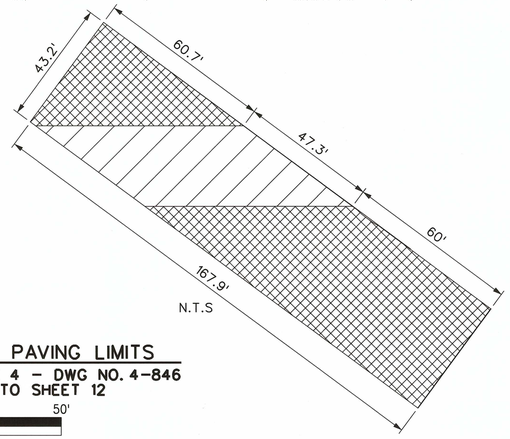
APPROVED BY: Stuart E. McKibbin DATE: 12-21-2007

ROMOLAND MDP
LINE A - STAGE 4
LINE A-18

PROJECT NO. 4-0-310
DRAWING NO. 4-846
SHEET NO. 31 OF 31

G:\2003\03-0383\DWG\PRO\03383811neA-Master.pro12/11/2007

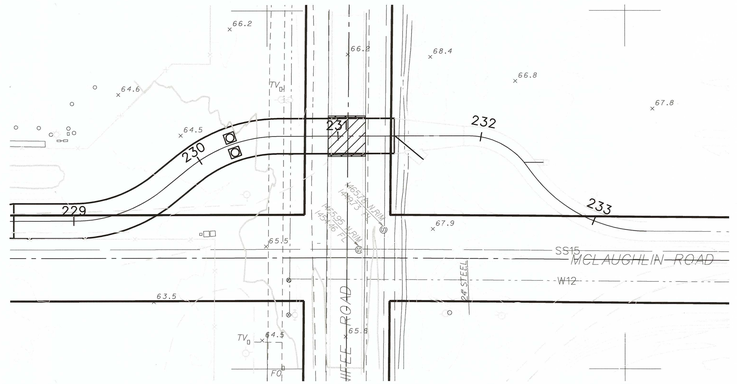


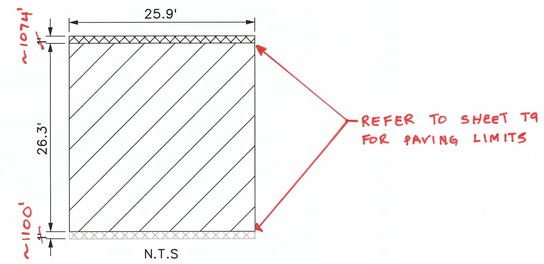


MATHEWS ROAD PAVING LIMITS

ROMOLAND LINE A STAGE 4 – DWG NO. 4-846
PLEASE REFER TO SHEET 12

50' 0 50'

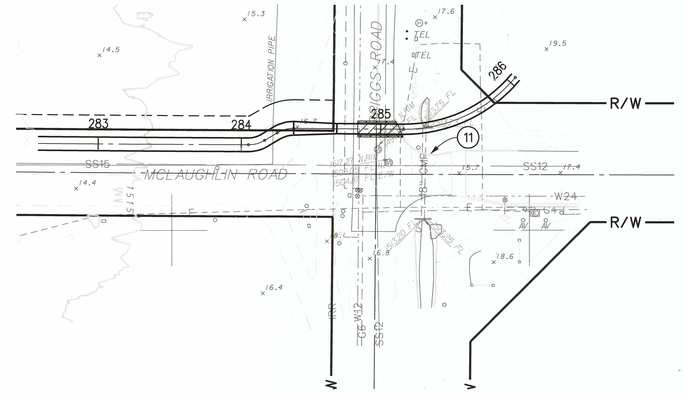


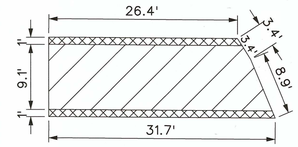


⚠ MENIFEE ROAD PAVING LIMITS

ROMOLAND LINE A STAGE 5 – DWG NO. 4-861
PLEASE REFER TO SHEET 4A AND DETAILS HEREIN

50' 0 50'





BRIGGS ROAD PAVING LIMITS

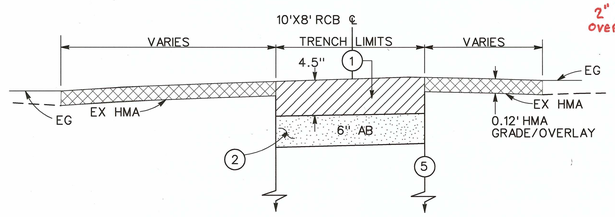
ROMOLAND LINE A STAGE 6 – DWG NO. 4-860
PLEASE REFER TO SHEET 9A

50' 0 50'

2" OVERLAY

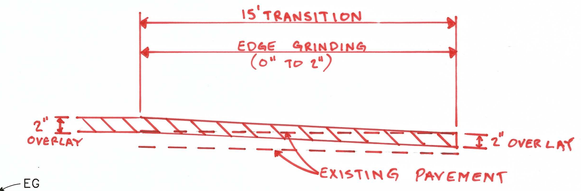
1.5" HMA GRIND LIMITS

HMA AND AB REPLACEMENT WITHIN TRENCH LIMITS



ROMOLAND MDP LINE A TYPICAL PAVING SECTION DETAIL

NTS



⚠ MENIFEE ROAD TRANSITION JOINT DETAIL
REFER TO SHEET T9 FOR PAVING LIMITS

NTS

NOTES

1. PAVE WITH 'TYPE A' HOT MIX ASPHALT.
2. PLACE 'CLASS 2' AGGREGATE BASE.
3. SEE TYPICAL EARTHWORK AND PAYLINE DETAIL, SHEET 31B.
5. SEE TYPICAL RCB EARTHWORK BEDDING AND PAYLINE DETAIL, SHEET 31B.
6. SEE TYPICAL RCP EARTHWORK BEDDING AND PAYLINE DETAIL, SHEET 31B.
8. PROTECT IN PLACE ALL MANHOLES/VALVES. ADJUST TO GRADE AS REQUIRED.
9. INSTALL/REPLACE ALL DISTURBED STRIPING, YELLOW CENTERLINE, WHITE EDGE LINES AND REFLECTIVE PAVEMENT.
10. ALL SIGNING, STRIPING AND PAVEMENT MARKINGS SHALL BE IN COMPLIANCE WITH SECTION 84 OF THE CALTRANS STANDARD SPECIFICATIONS (LATEST EDITION) AND ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL LAWS.
11. REMOVE AND REPLACE EXISTING CURB AND GUTTER AS NEEDED. MATCH TO EXISTING CURB HEIGHT. USE RIVERSIDE COUNTY STANDARD DWG NO. 201.
12. RECONSTRUCT EXISTING COMMERCIAL DRIVEWAY PER RIVERSIDE COUNTY STANDARD DWG NO. 207. MATCH WITH EXISTING DIMENSIONS.

REGISTERED PROFESSIONAL ENGINEER — MERKIB DEGAGA — No. 52203 — CIVIL — STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER — ROBERT J. CULLEN — No. 44684 — CIVIL — STATE OF CALIFORNIA

RECORD DRAWINGS

APPROVED BY: [signature]

DATE: 2/9/17

CITY OF MENIFEE
APPROVED BY: [signature]
CITY ENGINEER
DATE: 9/22/14

COUNTY OF RIVERSIDE
TRANSPORTATION DEPARTMENT
APPROVED BY: [signature]
DEPUTY DIRECTOR OF TRANSPORTATION
DATE: 9/25/14

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

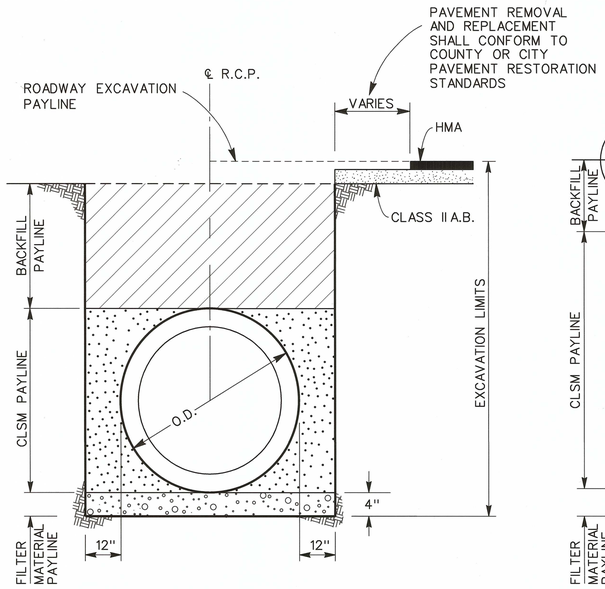
REF.	REVISIONS	APPR.	DATE
⚠	EXPANDED PAVING LIMITS PER REQUEST FROM CITY OF MENIFEE	MRA	2/9/17

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
DESIGNED BY: ROHINI MUSTAFA
DRAWN BY: MICHAEL ARMENTA
DATE DRAWN: AUGUST 2014
RECOMMENDED FOR APPROVAL BY: [signature]
DATE: 9/22/2014
APPROVED BY: [signature]
DATE: 22 SEPT 2014

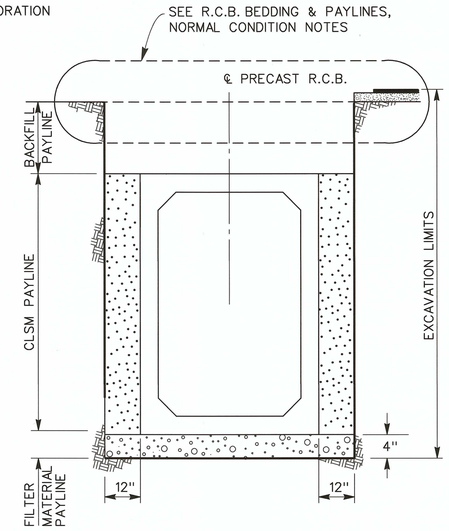
ROMOLAND MDP LINE A STAGE 4

PAVING PLAN

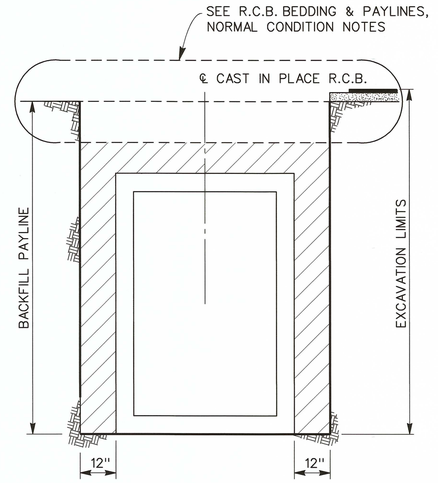
PROJECT NO. 4-00310-04
DRAWING NO. 4-846
SHEET NO. 31A OF 31



① R.C.P. EARTHWORK & PAYLINES
NORMAL CONDITION



① PRECAST R.C.B. EARTHWORK & PAYLINES
NORMAL CONDITION



① CAST IN PLACE R.C.B. EARTHWORK PAYLINES
NORMAL CONDITION

LEGEND

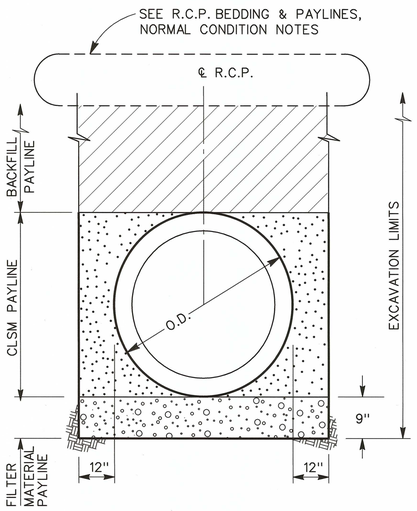
CLSM

FILTER MATERIAL

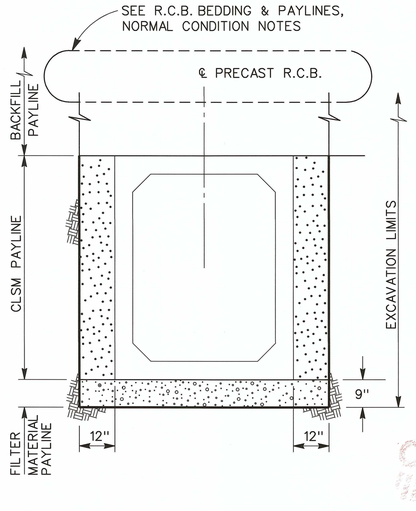
BACKFILL

NOTES

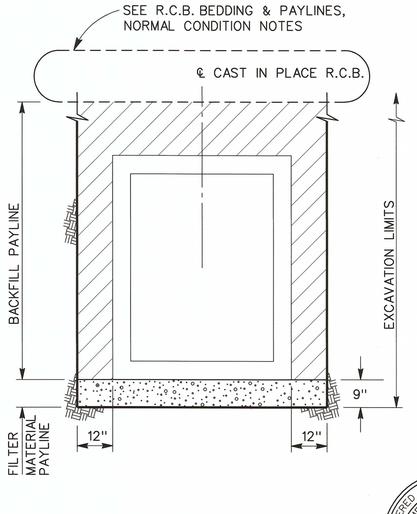
① THE NORMAL CONDITION, BEDDING & PAYLINES ARE TO BE USED UNLESS OTHERWISE INDICATED IN THE SPECIFICATIONS OR AS DIRECTED BY THE ENGINEER.



R.C.P. EARTHWORK & PAYLINES
GROUNDWATER CONDITION



GROUNDWATER CONDITION



R.C.B. EARTHWORK & PAYLINES
GROUNDWATER CONDITION

NOTES

IF PAVEMENT IS NOT INCLUDED IN EXCAVATION, THE EXCAVATION PAYLINES WILL BE AS SHOWN AT LEFT OF THE ℄. GROUND OR PAVEMENT SURFACE ELEVATIONS WILL BE ESTABLISHED BY FIELD SURVEYS.

RECORD DRAWINGS
APPROVED BY:
DATE: 2/9/17

REGISTERED PROFESSIONAL ENGINEER MERKEB DEGADA No. 52203 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER ROBERT J. CULLEN No. 44684 CIVIL STATE OF CALIFORNIA

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

REF.	REVISIONS	APPR.	DATE

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT

DESIGNED BY: ROHINI MUSTAFA
DRAWN BY: MICHAEL ARMENTA
DATE DRAWN: AUGUST 2014

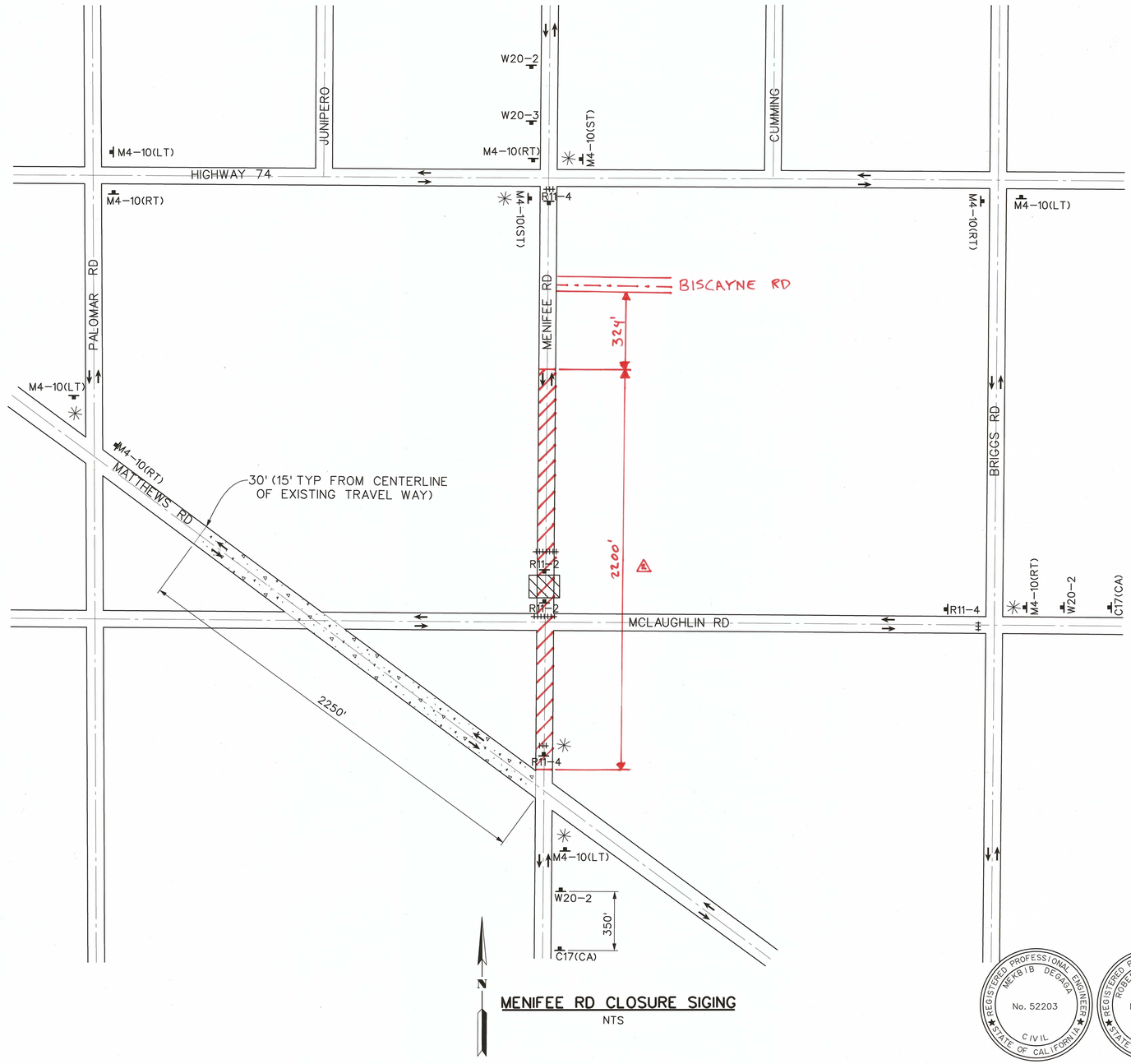
RECOMMENDED FOR APPROVAL BY:
DATE: 9/22/2014

APPROVED BY:
DATE: 22-Sept-2014

ROMOLAND MDP LINE A
STAGE 4

CLSM, BEDDING AND PAY LINES

PROJECT NO. 4-00310-04
DRAWING NO. 4-846
SHEET NO. 31B OF 31



MENIFEE RD CLOSURE SIGING
NTS

LEGEND

	CONSTRUCTION SIGNS
	TYPE III BARRICADE
	DIRECTION OF TRAVEL
	CONSTRUCTION AREA
	FLASHING ARROW SIGN
C17(CA)	ROAD WORK AHEAD
M4-10(RT)	DETOUR RIGHT
M4-10(LT)	DETOUR LEFT
R3-1	NO RIGHT TURN
R3-2	NO LEFT TURN
R3-4	NO U-TURN
R11-2	ROAD CLOSED
R11-4	ROAD CLOSED TO THRU TRAFFIC
W6-3	TWO WAY TRAFFIC
W20-1	ROAD WORK AHEAD
W20-2	DETOUR AHEAD
W20-3	ROAD CLOSED AHEAD
W24-1	DOUBLE REVERSE CURVE

✳ MENIFEE RD CLOSED AT MCLAUGHLIN RD USE DETOUR.

4" HMA

1 CONSTRUCT ~~DOUBLE CHIP SEAL~~ ON NATIVE. APPROXIMATE DIMENSIONS OF UNPAVED AREA ARE SHOWN HERE. PLEASE REFER TO SPECIAL PROVISIONS OF THIS PROJECT FOR DETAILS.

4 CONSTRUCT FULL STREET 2" HMA OVERLAY OUTSIDE TRENCH LIMITS REFER TO SHEET 31A FOR DETAILS.

NOTES

1. THESE ARE THE MINIMUM TRAFFIC CONTROL REQUIREMENTS. ADDITIONAL TRAFFIC CONTROL MAY BE REQUIRED TO FACILITATE PUBLIC SAFETY AND TRAFFIC FLOW IF DEEMED NECESSARY BY THE ENGINEER OR RIVERSIDE COUNTY TRANSPORTATION DEPARTMENT.
2. ALL TRAFFIC CONTROL DEVICES SHALL CONFORM TO THE CALIFORNIA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND WITH ALL OTHER APPLICABLE FEDERAL, STATE AND LOCAL LAWS.
3. FLASHING YELLOW BEACONS, TYPE B, SHALL ILLUMINATE ALL W20-1 SIGNS AND TYPE III BARRICADES USED AT THE WORK AREA DURING HOURS OF DARKNESS.
4. ALL TRENCHES SHALL BE BACK FILLED OR PLATED AT THE END OF EACH WORK DAY, OR OTHERWISE PROTECTED FROM PUBLIC ACCESS.
5. PRIVATE PROPERTY AND EMERGENCY ACCESS SHALL BE MAINTAINED AT ALL TIMES.
6. SPECIAL CONSTRUCTION SIGNS SHALL BE POSTED A MINIMUM OF 1 WEEK PRIOR TO CLOSING THE ROADWAY.

REGISTERED PROFESSIONAL ENGINEER MEMBTB DEGADA No. 52203 CIVIL STATE OF CALIFORNIA

REGISTERED PROFESSIONAL ENGINEER ROBERT J. CULLEN No. 44684 CIVIL STATE OF CALIFORNIA

DATE: 9/19/2

APPROVED BY:

RECORD DRAWINGS

CITY OF MENIFEE
APPROVED BY:
CITY ENGINEER
DATE: 9/22/14

Don't Dig...Until You Call U.S.A. Toll Free 1-800-227-2600 for the location of buried utility lines. Don't disrupt vital services.
TWO WORKING DAYS BEFORE YOU DIG

REF.	REVISIONS	APPR.	DATE
1	REVISED NOTES	MF	2/9/17
4	EXPANDED PAVING LIMITS PER REQUEST FROM CITY OF MENIFEE	MF	2/9/17

RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
DESIGNED BY: ROHINI MUSTAFA
DRAWN BY: M.A. , M HOWARD
DATE DRAWN: SEPTEMBER 2014
RECOMMENDED FOR APPROVAL BY:
DATE: 9/22/2014
APPROVED BY:
DATE: 22-Sept-2014

ROMOLAND MDP LINE A STAGE 4

MENIFEE – MCLAUGHLIN TRAFFIC CONTROL PLAN

PROJECT NO. 4-00310-04
DRAWING NO. 4-846
SHEET NO. T9 OF T12

APPENDIX I2

PROJECT SPECIFIC WATER QUALITY MANAGEMENT PLAN

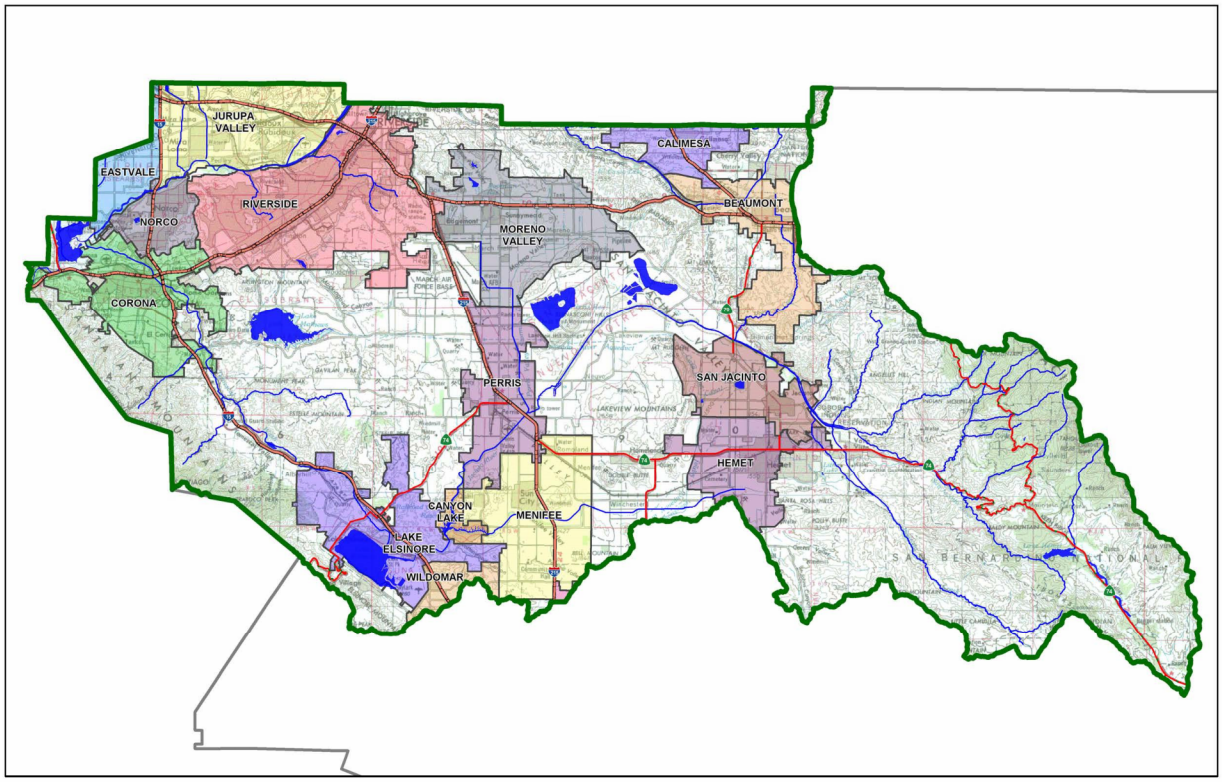
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Heritage Valley Business Center

Development No: Insert text here

Design Review/Case No: Insert text here



☒ **Preliminary**
☐ **Final**

Original Date Prepared: September 2024

Revision Date(s): Insert text here

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

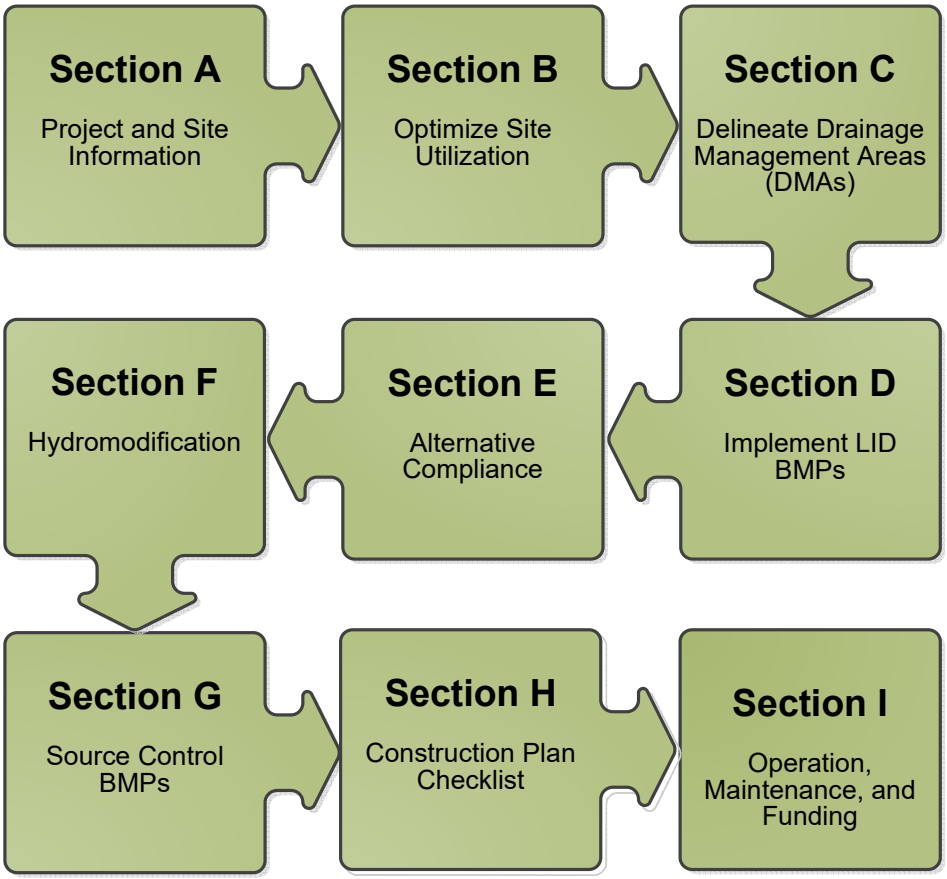
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A Brief Introduction

This Project-Specific WQMP Template for the **Santa Ana Region** has been prepared to help guide you in documenting compliance for your project. Because this document has been designed to specifically document compliance, you will need to utilize the WQMP Guidance Document as your "how-to" manual to help guide you through this process. Both the Template and Guidance Document go hand-in-hand, and will help facilitate a well prepared Project-Specific WQMP. Below is a flowchart for the layout of this Template that will provide the steps required to document compliance.



OWNER'S CERTIFICATION

This Project-Specific Water Quality Management Plan (WQMP) has been prepared for Core 5 Industrial Partners by Albert A. Webb Associates for the Heritage Valley Business Center project.

This WQMP is intended to comply with the requirements of City of Menifee for (Municipal Code Section 15.01) which includes the requirement for the preparation and implementation of a Project-Specific WQMP.

The undersigned, while owning the property/project described in the preceding paragraph, shall be responsible for the implementation and funding of this WQMP and will ensure that this WQMP is amended as appropriate to reflect up-to-date conditions on the site. In addition, the property owner accepts responsibility for interim operation and maintenance of Stormwater BMPs until such time as this responsibility is formally transferred to a subsequent owner. This WQMP will be reviewed with the facility operator, facility supervisors, employees, tenants, maintenance and service contractors, or any other party (or parties) having responsibility for implementing portions of this WQMP. At least one copy of this WQMP will be maintained at the project site or project office in perpetuity. The undersigned is authorized to certify and to approve implementation of this WQMP. The undersigned is aware that implementation of this WQMP is enforceable under the City of Menifee Water Quality Ordinance (Municipal Code Section 15.01).

"I, the undersigned, certify under penalty of law that the provisions of this WQMP have been reviewed and accepted and that the WQMP will be transferred to future successors in interest."

Owner's Signature	Date
Owner's Printed Name	Owner's Title/Position

PREPARER'S CERTIFICATION

"The selection, sizing and design of stormwater treatment and other stormwater quality and quantity control measures in this plan meet the requirements of Regional Water Quality Control Board Order No. **R8-2010-0033** and any subsequent amendments thereto."

Preparer's Signature	Date
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure:

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Commercial/Industrial
Planning Area:	Planning Area 2
Community Name:	Menifee North Specific Plan
Development Name:	Heritage Valley Business Center
PROJECT LOCATION	
Latitude & Longitude (DMS): 33.738558°, -117.182742°	
Project Watershed and Sub-Watershed: Santa Ana, San Jacinto	
Gross Acres: 41.22	
APN(s): 331-110-041, 331-110-027, 331-110-035, 331-110-026, 331-110-025, 331-110-024, 331-110-031- 331-110-023, -331-110-038, 331-110-039	
Map Book and Page No.: Thomas Bros. Map Page 838	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Commercial/Industrial
Proposed or Potential SIC Code(s)	**1541** (General Contractors-Industrial Building) **4225** (General Warehousing & Storage)
Area of Impervious Project Footprint (SF)	1,795,652
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	1,524,950
Does the project consist of offsite road improvements?	☒ Y ☐ N
Does the project propose to construct unpaved roads?	☐ Y ☒ N
Is the project part of a larger common plan of development (phased project)?	☐ Y ☒ N
EXISTING SITE CHARACTERISTICS	
Total area of existing Impervious Surfaces within the Project limits Footprint (SF)	15,650
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	Insert text here.
Are there any natural hydrologic features on the project site?	☐ Y ☒ N
Is a Geotechnical Report attached?	☒ Y ☐ N
If no Geotech. Report, list the NRCS soils type(s) present on the site (A, B, C and/or D)	Insert text here.
What is the Water Quality Design Storm Depth for the project?	0.61'

A.1 Maps and Site Plans

When completing your Project-Specific WQMP, include a map of the local vicinity and existing site. In addition, include all grading, drainage, landscape/plant palette and other pertinent construction plans in Appendix 2. At a **minimum**, your WQMP Site Plan should include the following:

- Drainage Management Areas
- Proposed Structural BMPs
- Drainage Path
- Drainage Infrastructure, Inlets, Overflows
- Source Control BMPs
- Buildings, Roof Lines, Downspouts
- Impervious Surfaces
- Standard Labeling
- BMP Locations (Lat/Long)

Use your discretion on whether or not you may need to create multiple sheets or can appropriately accommodate these features on one or two sheets. Keep in mind that the Co-Permittee plan reviewer must be able to easily analyze your project utilizing this template and its associated site plans and maps.

A.2 Identify Receiving Waters

Using Table A.1 below, list in order of upstream to downstream, the receiving waters that the project site is tributary to. Continue to fill each row with the Receiving Water's 303(d) listed impairments (if any), designated beneficial uses, and proximity, if any, to a RARE beneficial use. Include a map of the receiving waters in Appendix 1.

Table A.1 Identification of Receiving Waters

Receiving Waters	EPA Approved 303(d) List Impairments	Designated Beneficial Uses	Proximity to RARE Beneficial Use
San Jacinto River (Reach 3) (HU#802.11)	NONE	AGR, GWT, WILD, MUN, REC1, REC2, WARM	NOT A WATER BODY CLASSIFIED AS RARE
Canyon Lake (HU#802.11, 802.12)	NUTRIENTS, PATHOGENS	AGR, GWR, WILD, MUN, REC1, REC2, WARM	NOT A WATER BODY CLASSIFIED AS RARE
San Jacinto River (Reach 1) (HU#802.11, 802.32, 802.31)	NONE	AGR, GWR, WILD, MUN, REC1, REC2, WARM	NOT A WATER BODY CLASSIFIED AS RARE
Lake Elsinore (HU#802.31)	DDT, NUTRIENTS, LOW DO, PCBs, TOXICITY	MUN, REC1, REC2, WARM, WILD	NOT A WATER BODY CLASSIFIED AS RARE

A.3 Additional Permits/Approvals required for the Project:

Table A.2 Other Applicable Permits

Agency	Permit Required	
State Department of Fish and Game, 1602 Streambed Alteration Agreement	☐ Y	☒ N
State Water Resources Control Board, Clean Water Act (CWA) Section 401 Water Quality Cert.	☐ Y	☒ N
US Army Corps of Engineers, CWA Section 404 Permit	☐ Y	☒ N
US Fish and Wildlife, Endangered Species Act Section 7 Biological Opinion	☐ Y	☒ N
Statewide Construction General Permit Coverage	☒ Y	☐ N
Statewide Industrial General Permit Coverage	☒ Y	☐ N
Western Riverside MSHCP Consistency Approval (e.g., JPR, DBESP)	☐ Y	☒ N
Other *(please list in the space below as required)* Grading Permit	☒ Y	☐ N

If yes is answered to any of the questions above, the Co-Permittee may require proof of approval/coverage from those agencies as applicable including documentation of any associated requirements that may affect this Project-Specific WQMP.

Section B: Optimize Site Utilization (LID Principles)

Review of the information collected in Section 'A' will aid in identifying the principal constraints on site design and selection of LID BMPs as well as opportunities to reduce imperviousness and incorporate LID Principles into the site and landscape design. For example, **constraints** might include impermeable soils, high groundwater, groundwater pollution or contaminated soils, steep slopes, geotechnical instability, high-intensity land use, heavy pedestrian or vehicular traffic, utility locations or safety concerns. **Opportunities** might include existing natural areas, low areas, oddly configured or otherwise unbuildable parcels, easements and landscape amenities including open space and buffers (which can double as locations for bioretention BMPs), and differences in elevation (which can provide hydraulic head). Prepare a brief narrative for each of the site optimization strategies described below. This narrative will help you as you proceed with your LID design and explain your design decisions to others.

The 2010 Santa Ana MS4 Permit further requires that LID Retention BMPs (Infiltration Only or Harvest and Use) be used unless it can be shown that those BMPs are infeasible. Therefore, it is important that your narrative identify and justify if there are any constraints that would prevent the use of those categories of LID BMPs. Similarly, you should also note opportunities that exist which will be utilized during project design. Upon completion of identifying Constraints and Opportunities, include these on your WQMP Site plan in Appendix 1.

Consideration of "highest and best use" of the discharge should also be considered. For example, Lake Elsinore is evaporating faster than runoff from natural precipitation can recharge it. Requiring infiltration of 85% of runoff events for projects tributary to Lake Elsinore would only exacerbate current water quality problems associated with Pollutant concentration due to lake water evaporation. In cases where rainfall events have low potential to recharge Lake Elsinore (i.e. no hydraulic connection between groundwater to Lake Elsinore, or other factors), requiring infiltration of Urban Runoff from projects is counterproductive to the overall watershed goals. Project proponents, in these cases, would be allowed to discharge Urban Runoff, provided they used equally effective filtration-based BMPs.

Site Optimization

The following questions are based upon Section 3.2 of the WQMP Guidance Document. Review of the WQMP Guidance Document will help you determine how best to optimize your site and subsequently identify opportunities and/or constraints, and document compliance.

Did you identify and preserve existing drainage patterns? If so, how? If not, why?

The project proposes to preserve the existing drainage pattern to the southwest.

Did you identify and protect existing vegetation? If so, how? If not, why?

The majority of the existing site is vacant with little vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

Per the attached geotechnical and infiltration report, regional infiltration is not feasible.

Did you identify and minimize impervious area? If so, how? If not, why?

The site contains the standard impervious area per code for the given land use.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

All water quality runoff will be directed to the prooposed detention basins and modular wetlands.

Section C: Delineate Drainage Management Areas (DMAs)

Utilizing the procedure in Section 3.3 of the WQMP Guidance Document which discusses the methods of delineating and mapping your project site into individual DMAs, complete Table C.1 below to appropriately categorize the types of classification (e.g., Type A, Type B, etc.) per DMA for your project site. Upon completion of this table, this information will then be used to populate and tabulate the corresponding tables for their respective DMA classifications.

Table C.1 DMA Classifications

	DMA Name or ID	Surface Type(s)[1][2]	Area (Sq. Ft.)	DMA Type
DMA-A	L-A	LANDSCAPE	262,100	D
	R-A	ROOF	829,800	D
	H-A	HARDSCAPE	695,200	D
	SR-A	LANDSCAPE	9,000	B
	BMP-A	LANDSCAPE	1,701	D

[1]*Reference Table 2-1 in the WQMP Guidance Document to populate this column*
[2]*If multi-surface provide back-up*

Table C.2 Type 'A', Self-Treating Areas

DMA Name or ID	Area (Sq. Ft.)	Stabilization Type	Irrigation Type (if any)

Table C.3 Type 'B', Self-Retaining Areas

Self-Retaining Area				**Type 'C' DMAs that are draining to the Self-Retaining Area**		
DMA Name/ ID	Post-project surface type	Area (square feet) [A]	Storm Depth (inches) [B]	DMA Name / ID	[C] from Table C.4 = [C]	Required Retention Depth (inches) [D]
*SR-A	Landscape	9,000	0.63			

*Potential self-retaining areas exist. However, it was assumed that no self-retaining areas exist to remain conservative in sizing the bioretention basins. Self-retaining areas will be further analyzed during final engineering.

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

Table C.4 Type 'C', Areas that Drain to Self-Retaining Areas

DMA					Receiving Self-Retaining DMA		
DMA Name/ ID	Area (square feet)	Post-project surface type	Impervious fraction	Product		Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
L-A	BMP-A
R-A	
H-A	
SR-A	
BMP-A	

Note: More than one drainage management area can drain to a single LID BMP, however, one drainage management area may not drain to more than one BMP.

Section D: Implement LID BMPs

D.1 Infiltration Applicability

Is there an approved downstream 'Highest and Best Use' for stormwater runoff (see discussion in Chapter 2.4.4 of the WQMP Guidance Document for further details)? ☐ Y ☒ N

If yes has been checked, Infiltration BMPs shall not be used for the site; proceed to section D.3

If no, continue working through this section to implement your LID BMPs. It is recommended that you contact your Co-Permittee to verify whether or not your project discharges to an approved downstream 'Highest and Best Use' feature.

Geotechnical Report

A Geotechnical Report or Phase I Environmental Site Assessment may be required by the Copermittee to confirm present and past site characteristics that may affect the use of Infiltration BMPs. In addition, the Co-Permittee, at their discretion, may not require a geotechnical report for small projects as described in Chapter 2 of the WQMP Guidance Document. If a geotechnical report has been prepared, include it in Appendix 3. In addition, if a Phase I Environmental Site Assessment has been prepared, include it in Appendix 4.

Is this project classified as a small project consistent with the requirements of Chapter 2 of the WQMP Guidance Document? ☐ Y ☒ N

Infiltration Feasibility

Table D.1 below is meant to provide a simple means of assessing which DMAs on your site support Infiltration BMPs and is discussed in the WQMP Guidance Document in Chapter 2.4.5. Check the appropriate box for each question and then list affected DMAs as applicable. If additional space is needed, add a row below the corresponding answer.

Table D.1 Infiltration Feasibility

Does the project site…	YES	NO
…have any DMAs with a seasonal high groundwater mark shallower than 10 feet?		X
If Yes, list affected DMAs:		
…have any DMAs located within 100 feet of a water supply well?		X
If Yes, list affected DMAs:		
…have any areas identified by the geotechnical report as posing a public safety risk where infiltration of stormwater could have a negative impact?		X
If Yes, list affected DMAs:		
…have measured in-situ infiltration rates of less than 1.6 inches / hour?	X	
If Yes, list affected DMAs: **DMA-A**		
…have significant cut and/or fill conditions that would preclude in-situ testing of infiltration rates at the final infiltration surface?		X
If Yes, list affected DMAs:		
…geotechnical report identify other site-specific factors that would preclude effective and safe infiltration?		X
Describe here:		

If you answered "Yes" to any of the questions above for any DMA, Infiltration BMPs should not be used for those DMAs and you should proceed to the assessment for Harvest and Use below.

D.2 Harvest and Use Assessment

Please check what applies*:*

☒ Reclaimed water will be used for the non-potable water demands for the project.

☐Downstream water rights may be impacted by Harvest and Use as approved by the Regional Board (verify with the Copermittee).

☐The Design Capture Volume will be addressed using Infiltration Only BMPs. In such a case, Harvest and Use BMPs are still encouraged, but it would not be required if the Design Capture Volume will be infiltrated or evapotranspired.

If any of the above boxes have been checked, Harvest and Use BMPs need not be assessed for the site. If none of the above criteria applies, follow the steps below to assess the feasibility of irrigation use, toilet use and other non-potable uses (e.g., industrial use).

Irrigation Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for Irrigation Use BMPs on your site:

Step 1: Identify the total area of irrigated landscape on the site, and the type of landscaping used.

Total Area of Irrigated Landscape: Insert Area (Acres)

Type of Landscaping (Conservation Design or Active Turf): List Landscaping Type

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for irrigation use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Cross reference the Design Storm depth for the project site (see Exhibit A of the WQMP Guidance Document) with the left column of Table 2-3 in Chapter 2 to determine the minimum area of Effective Irrigated Area per Tributary Impervious Area (EIATIA).

Enter your EIATIA factor: EIATIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum irrigated area that would be required.

Minimum required irrigated area: Insert Area (Acres)

Step 5: Determine if harvesting stormwater runoff for irrigation use is feasible for the project by comparing the total area of irrigated landscape (Step 1) to the minimum required irrigated area (Step 4).

Minimum required irrigated area (Step 4)	Available Irrigated Landscape (Step 1)
Insert Area (Acres)	Insert Area (Acres)

Toilet Use Feasibility

Complete the following steps to determine the feasibility of harvesting stormwater runoff for toilet flushing uses on your site:

Step 1: Identify the projected total number of daily toilet users during the wet season, and account for any periodic shut downs or other lapses in occupancy:

Projected Number of Daily Toilet Users: Number of daily Toilet Users

Project Type: Enter 'Residential', 'Commercial', 'Industrial' or 'Schools'

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for toilet use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-2 in Chapter 2 to determine the minimum number or toilet users per tributary impervious acre (TUTIA).

Enter your TUTIA factor: TUTIA Factor

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of toilet users that would be required.

Minimum number of toilet users: Required number of toilet users

Step 5: Determine if harvesting stormwater runoff for toilet flushing use is feasible for the project by comparing the Number of Daily Toilet Users (Step 1) to the minimum required number of toilet users (Step 4).

Minimum required Toilet Users (Step 4)	**Projected number of toilet users (Step 1)**
Insert Area (Acres)	Insert Area (Acres)

Other Non-Potable Use Feasibility

Are there other non-potable uses for stormwater runoff on the site (e.g. industrial use)? See Chapter 2 of the Guidance for further information. If yes, describe below. If no, write N/A.

Insert narrative description here.

Step 1: Identify the projected average daily non-potable demand, in gallons per day, during the wet season and accounting for any periodic shut downs or other lapses in occupancy or operation.

Average Daily Demand: Projected Average Daily Use (gpd)

Step 2: Identify the planned total of all impervious areas on the proposed project from which runoff might be feasibly captured and stored for the identified non-potable use. Depending on the configuration of buildings and other impervious areas on the site, you may consider the site as a whole, or parts of the site, to evaluate reasonable scenarios for capturing and storing runoff and directing the stored runoff to the potential use(s) identified in Step 1 above.

Total Area of Impervious Surfaces: Insert Area (Acres)

Step 3: Enter the Design Storm depth for the project site (see Exhibit A) into the left column of Table 2-4 in Chapter 2 to determine the minimum demand for non-potable uses per tributary impervious acre.

Enter the factor from Table 2-4: Enter Value

Step 4: Multiply the unit value obtained from Step 3 by the total of impervious areas from Step 2 to develop the minimum number of gallons per day of non-potable use that would be required.

Minimum required use: Minimum use required (gpd)

Step 5: Determine if harvesting stormwater runoff for other non-potable use is feasible for the project by comparing the projected average daily use (Step 1) to the minimum required non-potable use (Step 4).

Minimum required non-potable use (Step 4)	**Projected average daily use (Step 1)**
Minimum use required (gpd)	Projected Average Daily Use (gpd)

If Irrigation, Toilet and Other Use feasibility anticipated demands are less than the applicable minimum values, Harvest and Use BMPs are not required and you should proceed to utilize LID Bioretention and Biotreatment per Section 3.4.2 of the WQMP Guidance Document.

D.3 Bioretention and Biotreatment Assessment

Other LID Bioretention and Biotreatment BMPs as described in Chapter 2.4.7 of the WQMP Guidance Document are feasible on nearly all development sites with sufficient advance planning.

Select one of the following:

☒ LID Bioretention/Biotreatment BMPs will be used for some or all DMAs of the project as noted below in Section D.4 (note the requirements of Section 3.4.2 in the WQMP Guidance Document).

☐ A site-specific analysis demonstrating the technical infeasibility of all LID BMPs has been performed and is included in Appendix 5. If you plan to submit an analysis demonstrating the technical infeasibility of LID BMPs, request a pre-submittal meeting with the Copermittee to discuss this option. Proceed to Section E to document your alternative compliance measures.

D.4 Feasibility Assessment Summaries

From the Infiltration, Harvest and Use, Bioretention and Biotreatment Sections above, complete Table D.2 below to summarize which LID BMPs are technically feasible, and which are not, based upon the established hierarchy.

Table D.2 LID Prioritization Summary Matrix

DMA Name/ID	LID BMP Hierarchy				No LID (Alternative Compliance)
	1. Infiltration	2. Harvest and use	3. Bioretention	4. Biotreatment	
DMA-A	☐	☐	☐	☒	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐
	☐	☐	☐	☐	☐

For those DMAs where LID BMPs are not feasible, provide a brief narrative below summarizing why they are not feasible, include your technical infeasibility criteria in Appendix 5, and proceed to Section E below to document Alternative Compliance measures for those DMAs. Recall that each proposed DMA must pass through the LID BMP hierarchy before alternative compliance measures may be considered.

Insert narrative description here.

D.5 LID BMP Sizing

Each LID BMP must be designed to ensure that the Design Capture Volume will be addressed by the selected BMPs. First**,** calculate the Design Capture Volume for each LID BMP using the V_{BMP} worksheet in Appendix F of the LID BMP Design Handbook. Second**,** design the LID BMP to meet the required V_{BMP} using a method approved by the Copermittee. Utilize the worksheets found in the LID BMP Design Handbook or consult with your Copermittee to assist you in correctly sizing your LID BMPs. Complete Table D.3 below to document the Design Capture Volume and the Proposed Volume for each LID BMP. Provide the completed design procedure sheets for each LID BMP in Appendix 6. You may add additional rows to the table below as needed.

Table D.3 DCV Calculations for LID BMPs

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]			
L-A	*95,690*	*LANDSCAPE*	*0.1*	*0.11*	*10,569.7*	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
R-A	*829,753*	*ROOFS*	*1*	*0.89*	*740,139.7*			
H-A	*869,310*	*HARDSCAPE*	*1*	*0.89*	*775,424.5*			
BMP-A	*1,701*	*LANDSCAPE*	*0.1*	*0.11*	*187.9*			
	1,796,454				1,526,321.8	0.61	77,588	***77,600***

[B], [C] is obtained as described in Section 2.3.1 of the WQMP Guidance Document

[E] is obtained from Exhibit A in the WQMP Guidance Document

[G] is obtained from a design procedure sheet, such as in LID BMP Design Handbook and placed in Appendix 6

*Potential self-retaining areas exist. However, it was assumed that no self-retaining areas exist to remain conservative in sizing the bioretention basins. Potential self-retaining area is included in the landscape area in the table above. Self-retaining areas will be further analyzed during final engineering.

Section E: Alternative Compliance (LID Waiver Program)

LID BMPs are expected to be feasible on virtually all projects. Where LID BMPs have been demonstrated to be infeasible as documented in Section D, other Treatment Control BMPs must be used (subject to LID waiver approval by the Copermittee). Check one of the following Boxes:

☒ LID Principles and LID BMPs have been incorporated into the site design to fully address all Drainage Management Areas. No alternative compliance measures are required for this project and thus this Section is not required to be completed.

- *Or* -

☐ The following Drainage Management Areas are unable to be addressed using LID BMPs. A site-specific analysis demonstrating technical infeasibility of LID BMPs has been approved by the Co-Permittee and included in Appendix 5. Additionally, no downstream regional and/or sub-regional LID BMPs exist or are available for use by the project. The following alternative compliance measures on the following pages are being implemented to ensure that any pollutant loads expected to be discharged by not incorporating LID BMPs, are fully mitigated.

List DMAs here.

E.1 Identify Pollutants of Concern

Utilizing Table A.1 from Section A above which noted your project's receiving waters and their associated EPA approved 303(d) listed impairments, cross reference this information with that of your selected Priority Development Project Category in Table E.1 below. If the identified General Pollutant Categories are the same as those listed for your receiving waters, then these will be your Pollutants of Concern and the appropriate box or boxes will be checked on the last row. The purpose of this is to document compliance and to help you appropriately plan for mitigating your Pollutants of Concern in lieu of implementing LID BMPs.

Table E.1 Potential Pollutants by Land Use Type

Priority Development Project Categories and/or Project Features (check those that apply)	General Pollutant Categories							
	Bacterial Indicators	Metals	Nutrients	Pesticides	Toxic Organic Compounds	Sediments	Trash & Debris	Oil & Grease
☐ Detached Residential Development	P	N	P	P	N	P	P	P
☐ Attached Residential Development	P	N	P	P	N	P	P	P[(2)]
☒ Commercial/Industrial Development	P[(3)]	P	P[(1)]	P[(1)]	P[(5)]	P[(1)]	P	P
☐ Automotive Repair Shops	N	P	N	N	P[(4, 5)]	N	P	P
☐ Restaurants (>5,000 ft^2)	P	N	N	N	N	N	P	P
☐ Hillside Development (>5,000 ft^2)	P	N	P	P	N	P	P	P
☒ Parking Lots (>5,000 ft^2)	P[(6)]	P	P[(1)]	P[(1)]	P[(4)]	P[(1)]	P	P
☐ Retail Gasoline Outlets	N	P	N	N	P	N	P	P
Project Priority Pollutant(s) of Concern	☐	☐	☐	☐	☐	☐	☐	☐

P = Potential

N = Not Potential

(1) A potential Pollutant if non-native landscaping exists or is proposed onsite; otherwise not expected

(2) A potential Pollutant if the project includes uncovered parking areas; otherwise not expected

(3) A potential Pollutant is land use involving animal waste

(4) Specifically petroleum hydrocarbons

(5) Specifically solvents

(6) Bacterial indicators are routinely detected in pavement runoff

E.2 Stormwater Credits

Projects that cannot implement LID BMPs but nevertheless implement smart growth principles are potentially eligible for Stormwater Credits. Utilize Table 3-8 within the WQMP Guidance Document to identify your Project Category and its associated Water Quality Credit. If not applicable, write N/A.

Table E.2 Water Quality Credits

Qualifying Project Categories	Credit Percentage[2]
N/A	
Total Credit Percentage[1]	

[1]Cannot Exceed 50%

[2]Obtain corresponding data from Table 3-8 in the WQMP Guidance Document

E.3 Sizing Criteria

After you appropriately considered Stormwater Credits for your project, utilize Table E.3 below to appropriately size them to the DCV, or Design Flow Rate, as applicable. Please reference Chapter 3.5.2 of the WQMP Guidance Document for further information.

Table E.3 Treatment Control BMP Sizing

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Impervious Fraction, I_f	DMA Runoff Factor	DMA Area x Runoff Factor		*Enter BMP Name / Identifier Here*		
	[A]		[B]	[C]	[A] x [C]				
N/A						*Design Storm Depth (in)*	*Minimum Design Capture Volume or Design Flow Rate (cubic feet or cfs)*	*Total Storm Water Credit % Reduction*	*Proposed Volume or Flow on Plans (cubic feet or cfs)*
	A_T = Σ[A]				Σ= [D]	[E]	$[F] = \frac{[D]x[E]}{[G]}$	[F] X (1-[H])	[I]

[B], [C] is obtained as described in Section 2.3.1 from the WQMP Guidance Document

[E] is for Flow-Based Treatment Control BMPs [E] = .2, for Volume-Based Control Treatment BMPs, [E] obtained from Exhibit A in the WQMP Guidance Document

[G] is for Flow-Based Treatment Control BMPs [G] = 43,560, for Volume-Based Control Treatment BMPs, [G] = 12

[H] is from the Total Credit Percentage as Calculated from Table E.2 above

[I] as obtained from a design procedure sheet from the BMP manufacturer and should be included in Appendix 6

E.4 Treatment Control BMP Selection

Treatment Control BMPs typically provide proprietary treatment mechanisms to treat potential pollutants in runoff, but do not sustain significant biological processes. Treatment Control BMPs must have a removal efficiency of a medium or high effectiveness as quantified below:

- **High**: equal to or greater than 80% removal efficiency
- **Medium**: between 40% and 80% removal efficiency

Such removal efficiency documentation (e.g., studies, reports, etc.) as further discussed in Chapter 3.5.2 of the WQMP Guidance Document, must be included in Appendix 6. In addition, ensure that proposed Treatment Control BMPs are properly identified on the WQMP Site Plan in Appendix 1.

Table E.4 Treatment Control BMP Selection

Selected Treatment Control BMP Name or ID[1]	Priority Pollutant(s) of Concern to Mitigate[2]	Removal Efficiency Percentage[3]
BMP-A	TSS	86%
	TP	70%
	TN	34%
	TCu	55%
	Total Dissolved Copper	43%
	TZn	56%
	Total Petroleum Hyrocarbons	73%

[1] Treatment Control BMPs must not be constructed within Receiving Waters. In addition, a proposed Treatment Control BMP may be listed more than once if they possess more than one qualifying pollutant removal efficiency.

[2] Cross Reference Table E.1 above to populate this column.

[3] As documented in a Co-Permittee Approved Study and provided in Appendix 6.

Section F: Hydromodification

F.1 Hydrologic Conditions of Concern (HCOC) Analysis

Once you have determined that the LID design is adequate to address water quality requirements, you will need to assess if the proposed LID Design may still create a HCOC. Review Chapters 2 and 3 (including Figure 3-7) of the WQMP Guidance Document to determine if your project must mitigate for Hydromodification impacts. If your project meets one of the following criteria which will be indicated by the check boxes below, you do not need to address Hydromodification at this time. However, if the project does not qualify for Exemptions 1, 2 or 3, then additional measures must be added to the design to comply with HCOC criteria. This is discussed in further detail below in Section F.2.

HCOC EXEMPTION 1: The Priority Development Project disturbs less than one acre. The Copermittee has the discretion to require a Project-Specific WQMP to address HCOCs on projects less than one acre on a case by case basis. The disturbed area calculation should include all disturbances associated with larger common plans of development.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply.

HCOC EXEMPTION 2: The volume and time of concentration[1] of storm water runoff for the post-development condition is not significantly different from the pre-development condition for a 2-year return frequency storm (a difference of 5% or less is considered insignificant) using one of the following methods to calculate:

- Riverside County Hydrology Manual
- Technical Release 55 (TR-55): Urban Hydrology for Small Watersheds (NRCS 1986), or derivatives thereof, such as the Santa Barbara Urban Hydrograph Method
- Other methods acceptable to the Co-Permittee

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, report results in Table F.1 below and provide your substantiated hydrologic analysis in Appendix 7.

Table F.1 Hydrologic Conditions of Concern Summary

	2 year – 24 hour		
	Pre-condition	**Post-condition**	**% Difference**
Time of Concentration	INSERT VALUE	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	INSERT VALUE	INSERT VALUE	INSERT VALUE

[1] Time of concentration is defined as the time after the beginning of the rainfall when all portions of the drainage basin are contributing to flow at the outlet.

HCOC EXEMPTION 3: All downstream conveyance channels to an adequate sump (for example, Prado Dam, Lake Elsinore, Canyon Lake, Santa Ana River, or other lake, reservoir or naturally erosion resistant feature) that will receive runoff from the project are engineered and regularly maintained to ensure design flow capacity; no sensitive stream habitat areas will be adversely affected; or are not identified on the Co-Permittees Hydromodification Susceptibility Maps.

Does the project qualify for this HCOC Exemption? ☐ Y ☒ N

If Yes, HCOC criteria do not apply and note below which adequate sump applies to this HCOC qualifier:

INSERT TEXT HERE

F.2 HCOC Mitigation

If none of the above HCOC Exemption Criteria are applicable, HCOC criteria is considered mitigated if they meet one of the following conditions:

a. Additional LID BMPS are implemented onsite or offsite to mitigate potential erosion or habitat impacts as a result of HCOCs. This can be conducted by an evaluation of site-specific conditions utilizing accepted professional methodologies published by entities such as the California Stormwater Quality Association (CASQA), the Southern California Coastal Water Research Project (SCCRWP), or other Co-Permittee approved methodologies for site-specific HCOC analysis.

b. The project is developed consistent with an approved Watershed Action Plan that addresses HCOC in Receiving Waters.

c. Mimicking the pre-development hydrograph with the post-development hydrograph, for a 2-year return frequency storm. Generally, the hydrologic conditions of concern are not significant, if the post-development hydrograph is no more than 10% greater than pre-development hydrograph. In cases where excess volume cannot be infiltrated or captured and reused, discharge from the site must be limited to a flow rate no greater than 110% of the pre-development 2-year peak flow.

Be sure to include all pertinent documentation used in your analysis of the items a, b or c in Appendix 7.

The 2-year, 24-hour storm has been routed down to existing flowrates. See appendix 7 for applicable calculations.

Section G: Source Control BMPs

Source control BMPs include permanent, structural features that may be required in your project plans — such as roofs over and berms around trash and recycling areas — and Operational BMPs, such as regular sweeping and "housekeeping", that must be implemented by the site's occupant or user. The MEP standard typically requires both types of BMPs. In general, Operational BMPs cannot be substituted for a feasible and effective permanent BMP. Using the Pollutant Sources/Source Control Checklist in Appendix 8, review the following procedure to specify Source Control BMPs for your site:

1. ***Identify Pollutant Sources*:** Review Column 1 in the Pollutant Sources/Source Control Checklist. Check off the potential sources of Pollutants that apply to your site.

2. ***Note Locations on Project-Specific WQMP Exhibit*:** Note the corresponding requirements listed in Column 2 of the Pollutant Sources/Source Control Checklist. Show the location of each Pollutant source and each permanent Source Control BMP in your Project-Specific WQMP Exhibit located in Appendix 1.

3. ***Prepare a Table and Narrative*:** Check off the corresponding requirements listed in Column 3 in the Pollutant Sources/Source Control Checklist. In the left column of Table G.1 below, list each potential source of runoff Pollutants on your site (from those that you checked in the Pollutant Sources/Source Control Checklist). In the middle column, list the corresponding permanent, Structural Source Control BMPs (from Columns 2 and 3 of the Pollutant Sources/Source Control Checklist) used to prevent Pollutants from entering runoff. **Add additional narrative** in this column that explains any special features, materials or methods of construction that will be used to implement these permanent, Structural Source Control BMPs.

4. ***Identify Operational Source Control BMPs:*** To complete your table, refer once again to the Pollutant Sources/Source Control Checklist. List in the right column of your table the Operational BMPs that should be implemented as long as the anticipated activities continue at the site. Copermittee stormwater ordinances require that applicable Source Control BMPs be implemented; the same BMPs may also be required as a condition of a use permit or other revocable Discretionary Approval for use of the site.

Table G.1 Permanent and Operational Source Control Measures

Potential Sources of Runoff pollutants	Permanent Structural Source Control BMPs	Operational Source Control BMPs
A. On-site storm drain inlets	*Mark all inlets with the works "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951-955-1200 to verify.*	*Maintain and periodically repaint or replace inlet markings as needed; at least every 5 years. Inspect annually every summer.* *Provide stormwater pollution prevention information to new site owners, lessees, or operators.* *See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in Appendix 10 (CASQA Stormwater Quality Handbook at*

	On-site drainage structures, including all storm drain clean outs, area drains, inlets, catch basins, inlet & outlet structures, lift stations, forebays, & water treatment control basins shall be inspected and maintained on a regular basis to ensure their operational adequacy. Inspect and maintain before each rainy season and after the first heavy rain.	*www.cabmphandbooks.com* *Include the following in lessee agreements: "Tenants shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains"* *Maintenance should include removal of trash, debris, & sediment and the repair of any deficiencies or damage that may impact water quality. Maintain at least once in September prior to the rainy season and after storm as needed.*
B. Interior floor drains and elevator shaft sump	*The interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer*	*Inspect and maintain drains at least once annually to prevent blockages and overflow.*
C. Landscape/Outdoor Pesticide Use	*The final landscape shall be designed to accomplish all of the following:* *Preserve existing native trees, shrubs and ground cover to the maximum extent possible.* *Design landscape to minimize irrigation and runoff, to promote surface infiltration where appropriate and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.* *Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.* *Consider using pest-resistant plants, especially adjacent to hardscape.* *To insure successful establishments, select plants appropriate to site, soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency and plant interactions.* *Pesticide usage should be at a necessary minimum and be consistent with the instructions*	*Maintain landscaping using minimum or no pesticides.* *See applicable operational BMPs in "What you should know for…. Landscape and Gardening" at http://rcflood.org/stormwater and Appendix 10.* *Provide IPM information to new owners, lessees and operators.* *Landscape maintenance should include mowing, weeding, trimming, removal of trash & debris, repair of erosion, re-vegetation, and removal of cut & dead vegetation. It should be completed before rainy season and as needed.* *Irrigation maintenance should include the repair of leaky or broken sprinkler heads, the maintaining of timing apparatus accuracy, and the maintaining of shut off valves in good working order.*

	contained on product labels and with the regulations administered by the State Department of Pesticide *Regulation. Pesticides should be used at an absolute minimum or not at all in the retention/infiltration basin. If used, it should not be applied in close proximity to the rainy season.*	
D. Refuse Trash Storage areas	*Trash container storage areas shall be paved with an impervious surface, designed not to allow run-on from adjoining areas, designed to divert drainage from adjoining roofs and pavements from the surrounding area, and screened or walled to prevent off-site transport of trash.* *Trash dumpsters (containers) shall be leak proof and have attached covers or lids.* *Trash enclosures shall be roofed per City standards and the details on the FWQMP Exhibit in Appendix 1.* *Trash compactors shall be roofed and set on a concrete pad per City standards. The pad shall be a minimum of one foot larger all around than the trash compactor and sloped to drain to a sanitary sewer line. Connection of trash area drains to the MS4 is prohibited.* *See CASQA SD-32 BMP Fact Sheets in Appendix 10 for additional information.* *Signs shall be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.*	*Adequate number of receptacles shall be provided. Inspect receptacles monthly; repair or replace leaky receptacles as needed. Keep receptacles covered.* *Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, in Appendix 10, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbook* *at www.cabmphandbooks.com*
E. Loading Docks	*Loading docks will not be covered and are 4 feet above finished pavement surface.* *Spill kits are to be kept on-site at all times per SC-11*	*Move loaded and unloaded items indoors as soon as possible.* *Inspect for accumulated trash and debris. Implement good housekeeping procedures on a regular basis. Sweep areas clean instead of using wash water.* *Loading docks will be kept in a clean and orderly condition, through a regular program of sweeping and litter control, and immediate clean up of any spills or broken containers.*

		Property owner will ensure that loading docks will be swept as needed. Cleanup procedures will not include the use of wash-down water. Property owner will be responsible for implementation of loading dock housekeeping procedures *See the Fact Sheet SC-30, in Appendix 10, "Outdoor Loading and Unloading" in the CASQA Stormwater Quality Handbooks a* *www.cabmphandbooks.com*
F. Fire Sprinkler Test Water	*Provide a means to drain fire sprinkler test water to the sanitary sewer.*	*See the note in the Fact Sheet SC-41, in Appendix 10, "Building and Grounds Maintenance", in the CASQA Stormwater Quality Handbooks at* *www.cabmphandbooks.com*
G. Miscellaneous Drain or Wash Water or Other Sources *Boiler drain lines* *Condensate drain lines* *Rooftop equipment* *Drainage sumps* *Roofing, gutters and trim* *Other sources*	*Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system* *Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur.* *Condensate drain lines may not discharge to the storm drain system.* *Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.* *Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.* *Avoid roofing, gutters and trim made of copper of other unprotected metals that may leach into runoff.* *Include controls for other sources as specified by local reviewer.*	
H. Plazas, sidewalks, and parking lots	*Spill kits are to be kept on-site at all times per SC-11*	*Sweep plazas, sidewalks, and parking lots regularly and before the rainy season to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect*

		washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.

Section H: Construction Plan Checklist

Populate Table H.1 below to assist the plan checker in an expeditious review of your project. The first two columns will contain information that was prepared in previous steps, while the last column will be populated with the corresponding plan sheets. This table is to be completed with the submittal of your final Project-Specific WQMP.

Table H.1 Construction Plan Cross-reference

BMP No. or ID	BMP Identifier and Description	Corresponding Plan Sheet(s)	BMP Location (Lat/Long)
*	*	*	*

Note that the updated table — or Construction Plan WQMP Checklist — is **only a reference tool** to facilitate an easy comparison of the construction plans to your Project-Specific WQMP. Co-Permittee staff can advise you regarding the process required to propose changes to the approved Project-Specific WQMP.

*To be included in final WQMP

Section I: Operation, Maintenance and Funding

The Copermittee will periodically verify that Stormwater BMPs on your site are maintained and continue to operate as designed. To make this possible, your Copermittee will require that you include in Appendix 9 of this Project-Specific WQMP:

1. A means to finance and implement facility maintenance in perpetuity, including replacement cost.
2. Acceptance of responsibility for maintenance from the time the BMPs are constructed until responsibility for operation and maintenance is legally transferred. A warranty covering a period following construction may also be required.
3. An outline of general maintenance requirements for the Stormwater BMPs you have selected.
4. Figures delineating and designating pervious and impervious areas, location, and type of Stormwater BMP, and tables of pervious and impervious areas served by each facility. Geo-locating the BMPs using a coordinate system of latitude and longitude is recommended to help facilitate a future statewide database system.
5. A separate list and location of self-retaining areas or areas addressed by LID Principles that do not require specialized O&M or inspections but will require typical landscape maintenance as noted in Chapter 5, pages 85-86, in the WQMP Guidance. Include a brief description of typical landscape maintenance for these areas.

Your local Co-Permittee will also require that you prepare and submit a detailed Stormwater BMP Operation and Maintenance Plan that sets forth a maintenance schedule for each of the Stormwater BMPs built on your site. An agreement assigning responsibility for maintenance and providing for inspections and certification may also be required.

Details of these requirements and instructions for preparing a Stormwater BMP Operation and Maintenance Plan are in Chapter 5 of the WQMP Guidance Document.

Maintenance Mechanism: WQMP Covenant and Agreement

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

☐ Y ☒ N

Include your Operation and Maintenance Plan and Maintenance Mechanism in Appendix 9. Additionally, include all pertinent forms of educational materials for those personnel that will be maintaining the proposed BMPs within this Project-Specific WQMP in Appendix 10.

Appendix 1: Maps and Site Plans

Location Map, WQMP Site Plan and Receiving Waters Map

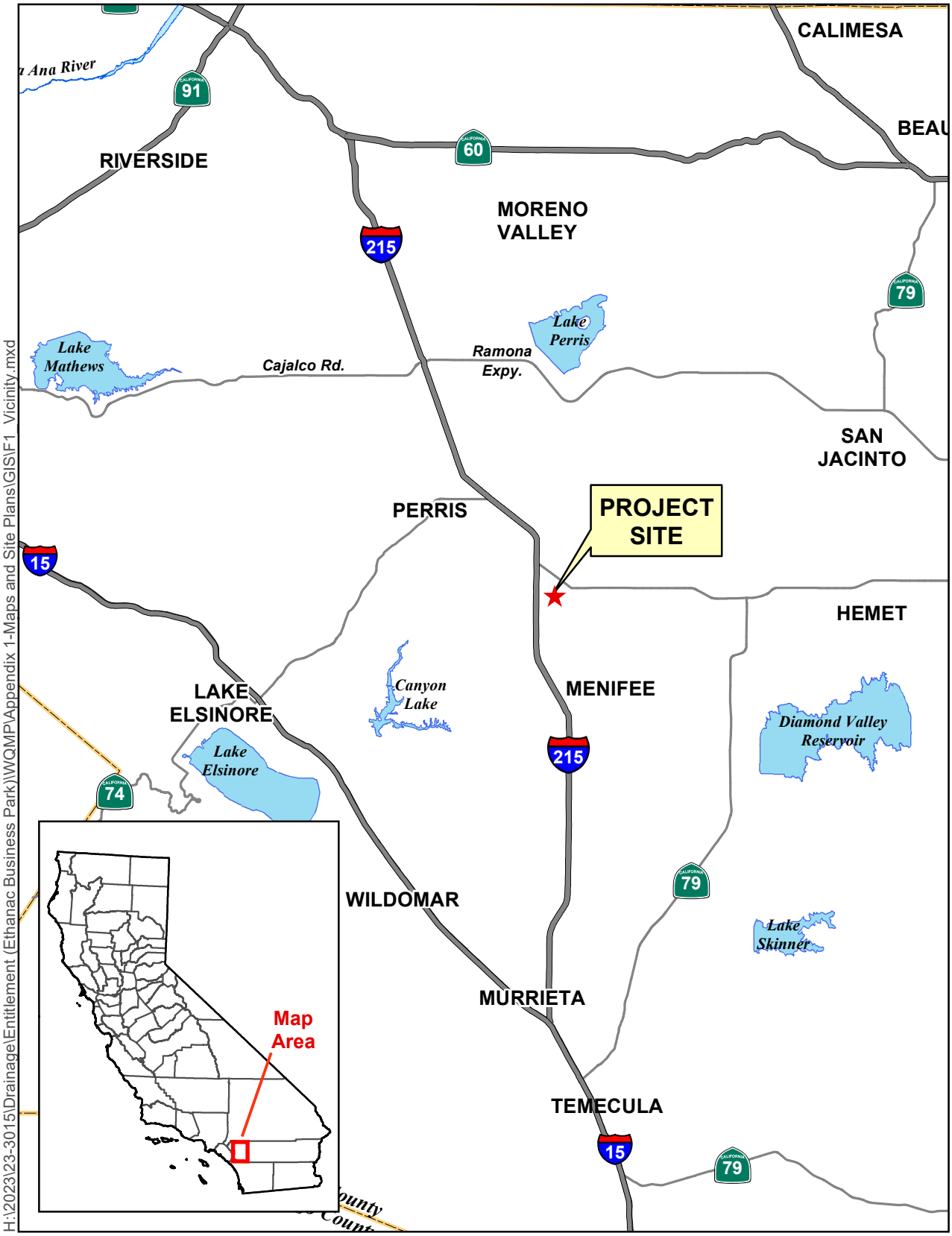
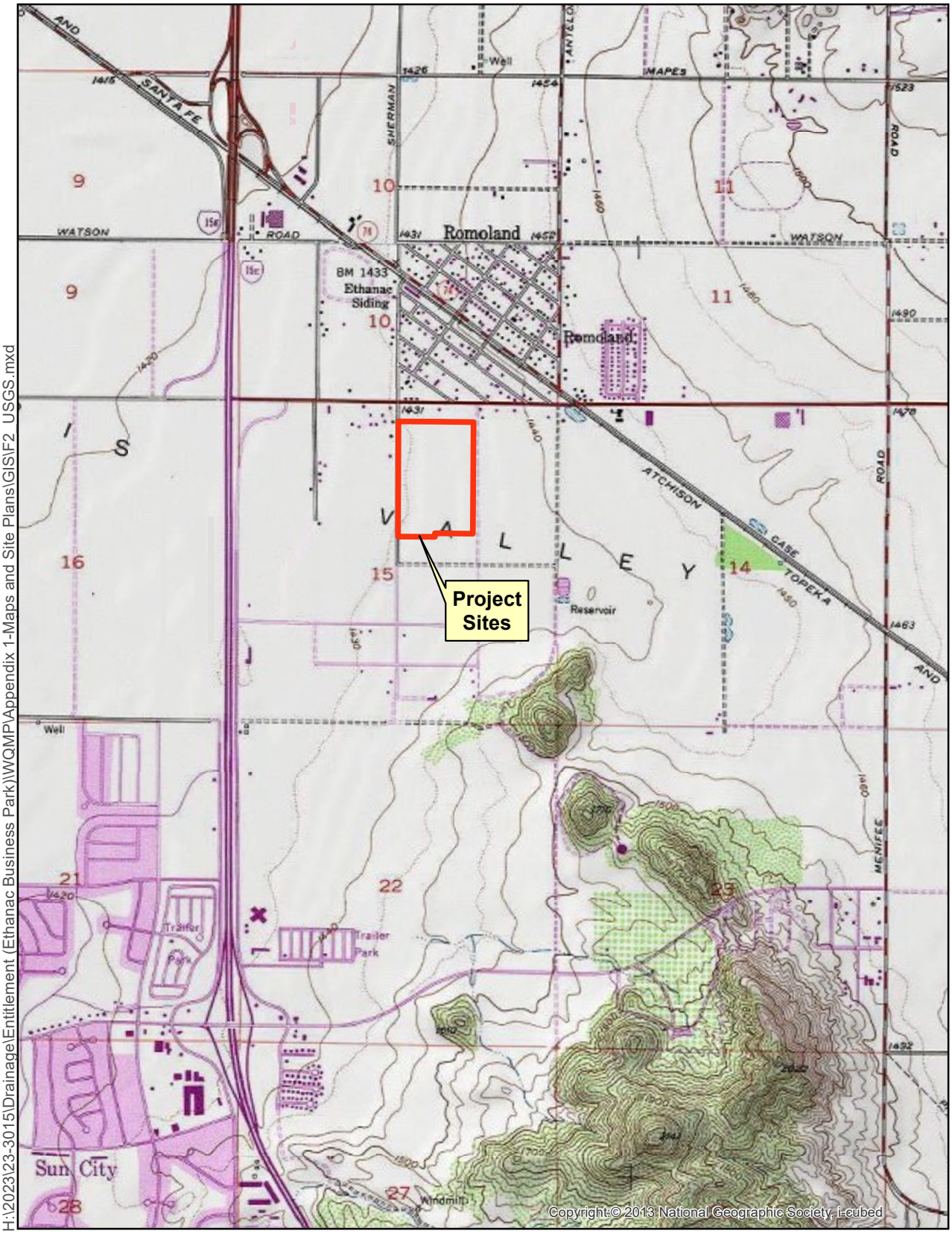


Figure 1. Vicinity Map



H:\2023\23-3015\Drainage\Entitlement (Ethanac Business Park)\WQMP\Appendix 1-Maps and Site Plans\GIS\F2_USGS.mxd

Sources: ESRI / USGS 7.5min Quad
DRGs: MENIFEE

Figure 2. USGS Topography Map

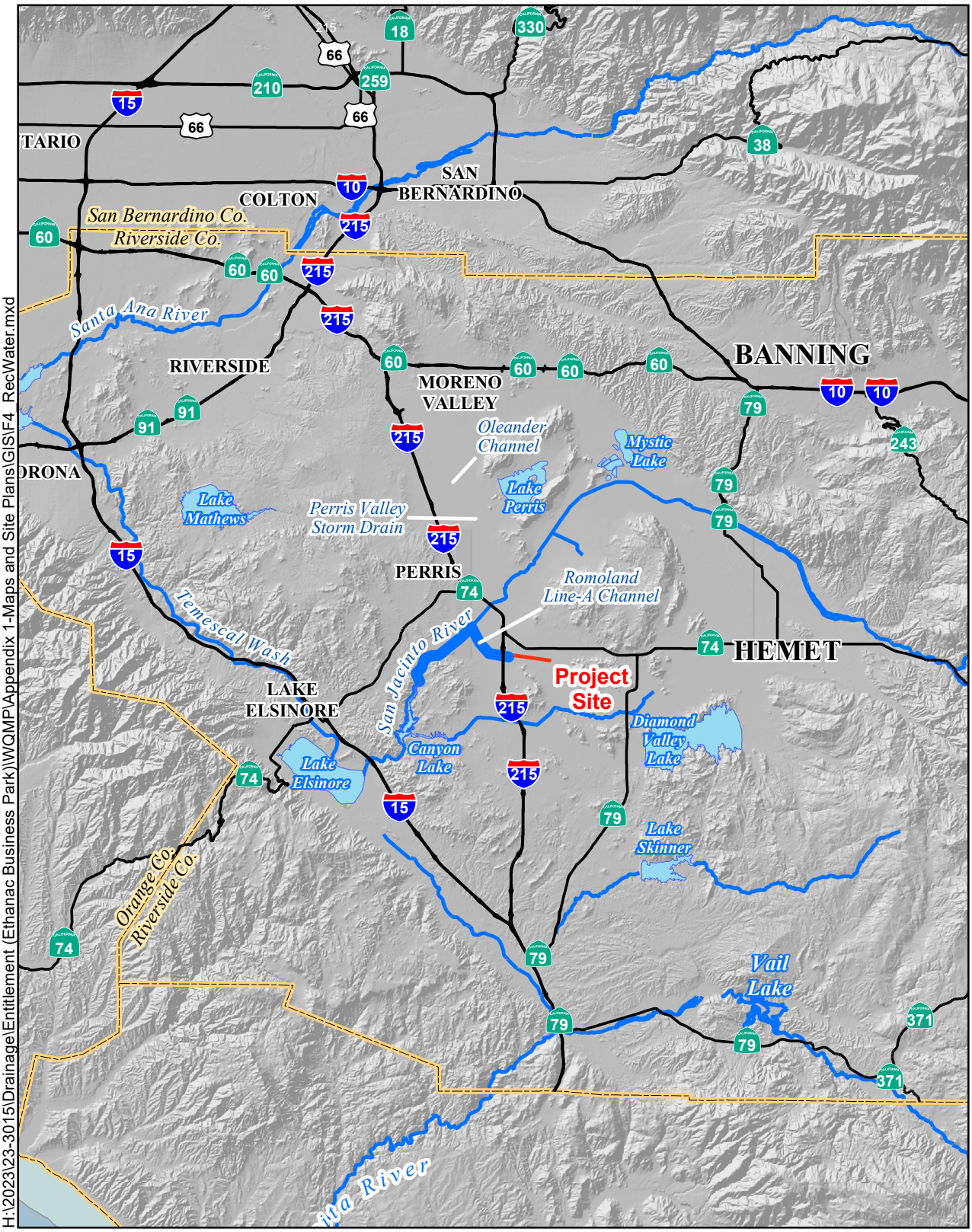
0 1,000 2,000
Feet



Sources: County of Riverside GIS, 2013; Eagle Aerial, April 2016.

Figure 3. Aerial Photograph

0 400 800 Feet



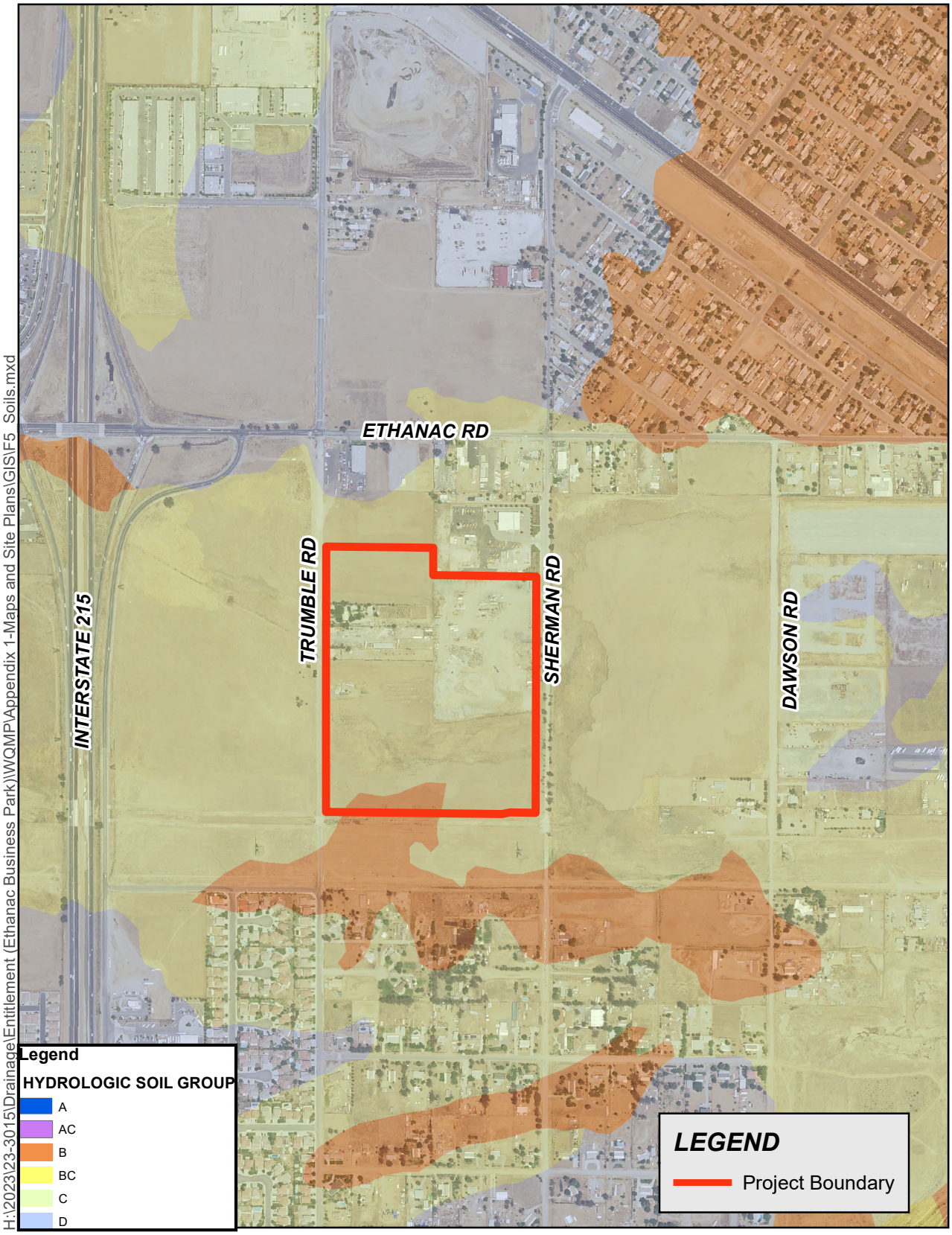
H:\2023\23-3015\Drainage\Entitlement (Ethanac Business Park)\WQMP\Appendix 1-Maps and Site Plans\GIS\F4_RecWater.mxd

Sources: USGS 30 Meter DEM;
USGS Digital Line Graph

Figure 4. Receiving Waterbodies

Flowpath

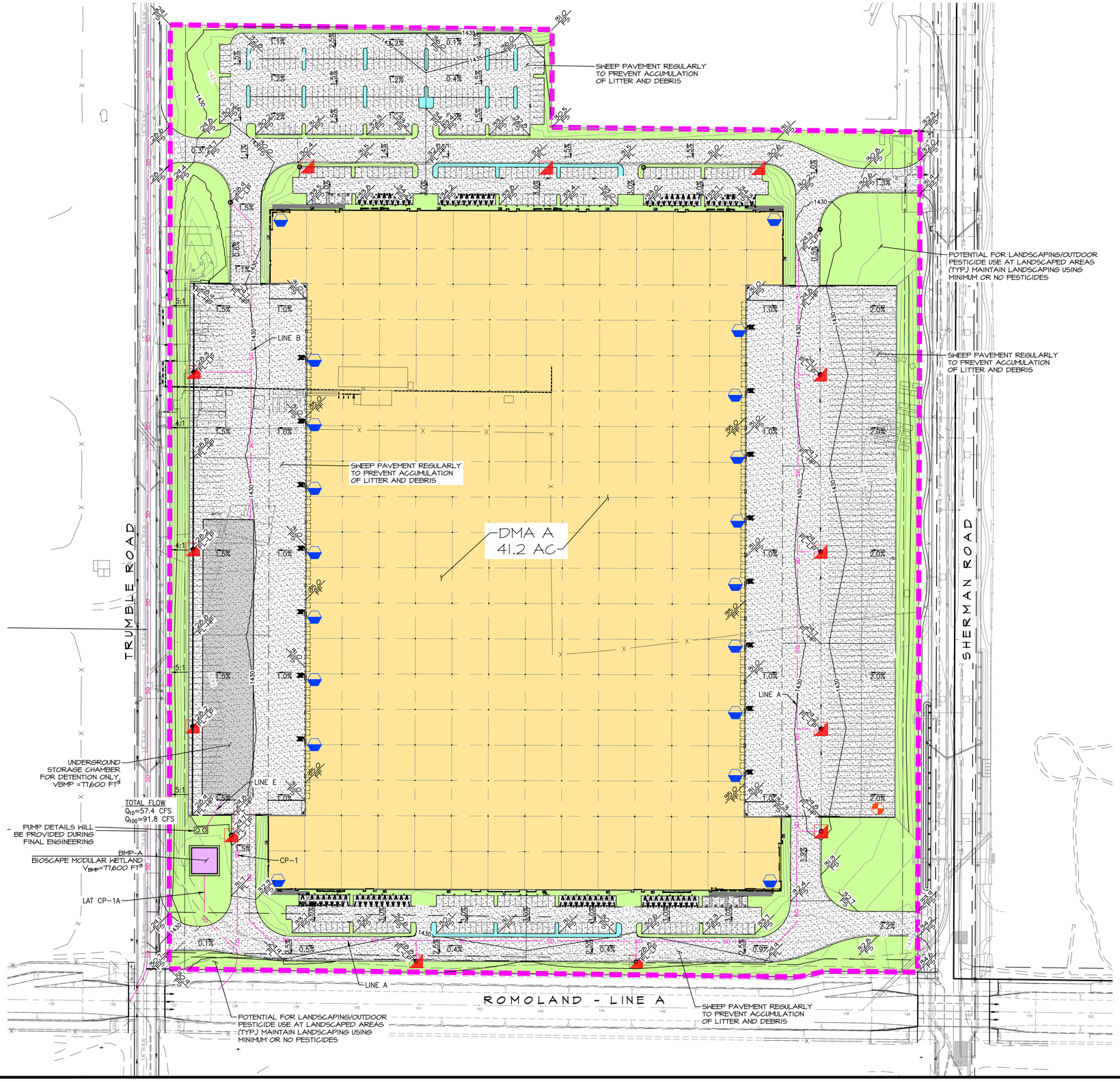
0 2 4 6
Miles



H:\2023\23-3015\Drainage\Entitlement (Ethanac Business Park)\WQMP\Appendix 1-Maps and Site Plans\GIS\F5 Soils.mxd

Eagle Aerial, April 2010;
Riverside County GIS, 2012
RCFC&WCD Hydology Manual Plate C-1.30

Figure 5. Soils Map



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- LANDSCAPING
- ROOF
- CONCRETE OR ASPHALT
- BMP
- SELF-RETAINING
- FLOW DIRECTION
- SD — STORM DRAIN PIPE
- ROOF DRAIN DOWNSPOUT
- CURB OPENING/CUT
- STORM INLET
- TRASH ENCLOSURE

DRAINAGE MANAGEMENT AREAS

LEGEND	DMA-ID	TYPE	AREA (SF)
	L-A	LANDSCAPE	95640
	R-A	ROOF	829753
	H-A	HARDSCAPE	869310
	BMP-A	LANDSCAPE	1701
	*SR-A	SELF-RETAINING	9000

GENERAL NOTES

1. THIS PRELIMINARY WATER QUALITY REPORT IS BASED ON THE CURRENT AVAILABLE INFORMATION AND IS SUBJECT TO MINOR MODIFICATIONS.
2. *POTENTIAL SELF-RETAINING AREAS EXIST AND WILL BE FURTHER ANALYZED DURING FINAL ENGINEERING, ASSUMED NO SELF-RETAINING AREAS TO REMAIN CONSERVATIVE IN SIZING THE BASINS. THERE IS APPROXIMATELY 9,000 SF OF SELF-RETAINING AREAS.
3. BASING AREA DESIGNED TO DRAW DOWN THE DESIGN CAPTURE VOLUME WITHIN 48 HOURS.

N W WEBB E S

1" = 80'

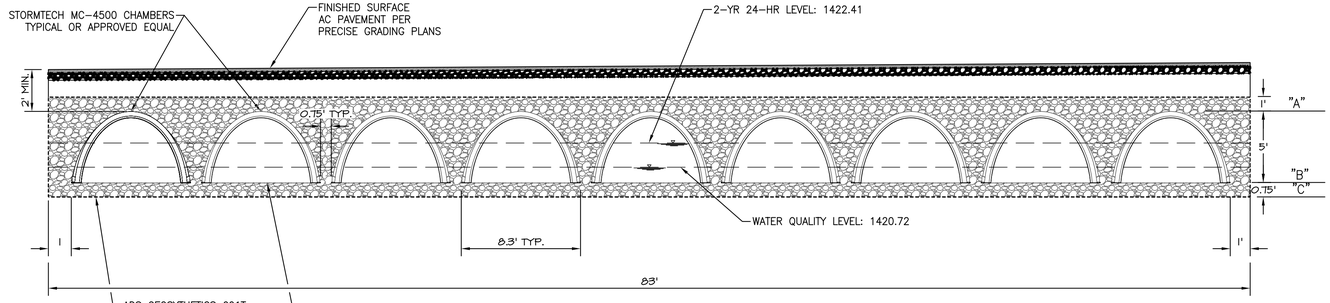
40 0 80 160 240

CITY OF MENIFEE

POST CONSTRUCTION B.M.P. SITE MAP
HERITAGE VALLEY BUSINESS CENTER
PPXXXX-XXX
SITE PLAN

SCALE:	1"=80'	ALBERT A. WEBB ASSOCIATES	W.O. 24-0564
DATE:	9/26/24	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	SHEET 1 OF 2 SHEETS
DESIGNED:	MJS		
CHECKED:	JSL		
PLN CK REF:			DWG. NO.
F.B.			

H:\2023\23-3015\DRAINAGE\ENTITLEMENT (ETHANAC BUSINESS PARK)\WQMP\DWG DRAWINGS\24-0564-PWQMP.DWG 9/26/2024 1:45:07 PM

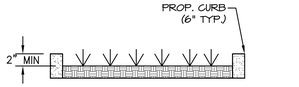


NOTE: MANUFACTURER IS RESPONSIBLE TO INSPECT CONSTRUCTION AND SUBMIT CERTIFICATE OF COMPLIANCE TO CITY OF MENIFEE.

ELEV. "A"	ELEV. "B"	ELEV. "C"
1423.64	1418.64	1417.89

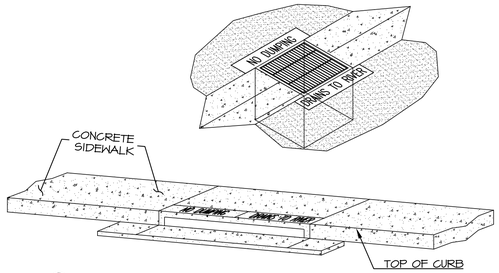
CHAMBER TYPICAL CROSS SECTION

N.T.S.



SELF-RETAINING FINGER ISLAND

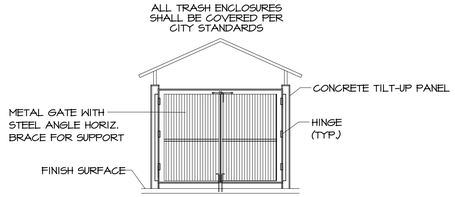
N.T.S.
ALL SELF-RETAINING AREAS WILL BE DEPRESSED A MINIMUM OF 2-INCHES



1. STENCILS TO HAVE 2" LETTERS AS FOLLOWS: "NO DUMPING - DRAINS TO RIVER"
2. PLACE BOTH STENCILS CENTERED WITHIN THE CATCHBASIN OPENINGS AND WITHIN THE TOP OF THE CURB.
3. SPRAY BOTH STENCILS WITH WHITE PAINT.
4. REMOVE STENCILS WHEN PAINT IS DRY.

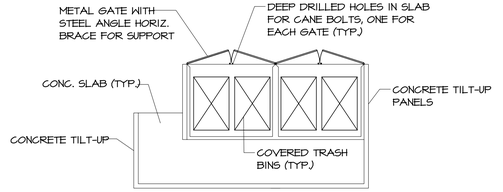
CATCH BASIN STENCILING DETAIL

N.T.S.



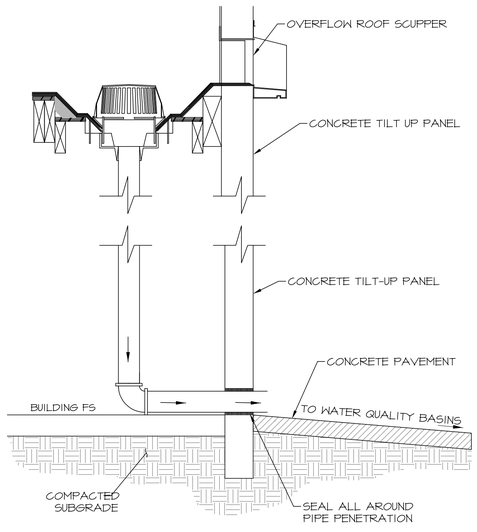
TRASH ENCLOSURE GATE ELEVATION

N.T.S.



TRASH ENCLOSURE PLAN DETAIL

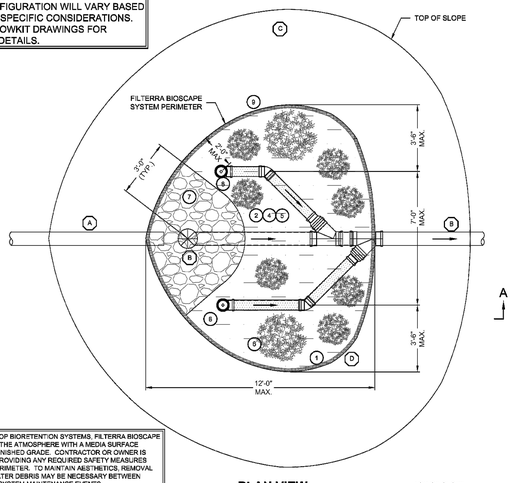
N.T.S.



ROOF DRAIN DETAIL

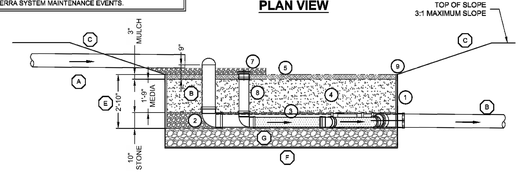
N.T.S.

THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.



AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.

PLAN VIEW



SECTION A-A VIEW

BILL OF MATERIALS

COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE

*NOTE: PLANTS PROVIDED BY OTHERS

QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES

1. CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
2. PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
3. USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
4. CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE TIME BETWEEN EXCAVATION AND DELIVERY AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
5. CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
6. CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:

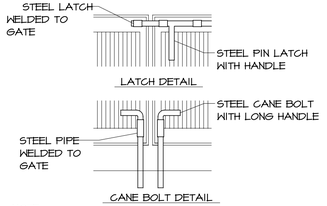
- (A) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1. SOD IS REQUIRED TO STABILIZE SIDE SLOPES OR ADJACENT GRADE
- (D) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL.
- (F) CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
- (G) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:

- (1) PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
- (2) PLACE 10" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
- (3) PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH, ASSOCIATED PIPING AND FITTINGS/ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
- (4) (5) PLACE 21" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
- PLACE 3" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
- (6) PROVIDE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
- (7) PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
- (8) PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
- (9) PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE™ SYSTEM
STANDARD DETAIL



NOTE:
LATCH AND CANE TO BE AT EXTERIOR SIDE OF GATES

TRASH ENCLOSURE GATE LATCHES DETAIL

N.T.S.

CITY OF MENIFEE

POST CONSTRUCTION B.M.P. SITE MAP
HERITAGE VALLEY BUSINESS CENTER
PPXXXX-XXX
DETAILS

SCALE:	N/A
DATE:	9/26/24
DESIGNED:	MJS
CHECKED:	JSL
PLN CK REF:	REF
F.B.	F.B.

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

W.O.	24-0564
SHEET	2
OF	2 SHEETS
DWG. NO.	

H:\2023\23-3015\DRAINAGE\ENTITLEMENT (ETHANAC BUSINESS PARK)\WQMP\DWG DRAWINGS\24-0564-PWQMP.DWG 9/26/2024 2:11:08 PM

H:\COMMON\ADDITIONAL\CONTECH FILTERRA\STANDARD DRAWINGS\FBX - BIOSCAPE SYSTEM (BIOBASIN)\NON-FILTERRA BIOSCAPE SUPERVISED SYSTEM - STD DETAIL.DWG 5/21/2020 8:57 AM

Appendix 2: Construction Plans

Grading and Drainage Plans

*To be included in final WQMP

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

GEOTECHNICAL INVESTIGATION
MENIFEE COMMERCE CENTER – PHASE III

Sherman Avenue, North of MacLaughlin Road
Menifee, California
for
Core5 Industrial Partners

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

June 3, 2022

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Core5 Industrial Partners
300 Spectrum Center Drive, Suite 880
Irvine, California 92618

Attention: Mr. Jon Kelly
Vice President Development

Project No.: **22G173-1**

Subject: **Geotechnical Investigation**
Proposed Menifee Commerce Center – Phase III
Sherman Road, North of McLaughlin Road
Menifee, California

Mr. Kelly:

In accordance with your request, we have conducted a geotechnical investigation at the subject site. We are pleased to present this report summarizing the conclusions and recommendations developed from our investigation.

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

Pablo Montes Jr.
Project Engineer

Robert G. Trazo, GE 2655
Principal Engineer



Distribution: (1) Addressee

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APPENDICES

A Plate 1: Site Location Map
Plate 2: Boring Location Plan
B Boring Logs
C Laboratory Test Results
D Grading Guide Specifications
E Seismic Design Parameters

1.0 EXECUTIVE SUMMARY

Presented below is a brief summary of the conclusions and recommendations of this investigation. Since this summary is not all inclusive, it should be read in complete context with the entire report.

Geotechnical Design Considerations

- Artificial fill soils were encountered at most of the boring locations, extending to depths of 2½ to 3± feet. The existing fill soils are considered to represent undocumented fill.
- The near-surface alluvial soils within the upper 3 to 4± feet possess a moderate potential for settlement when exposed to load increases in the range of those that will be exerted by the new foundations.
- The undocumented fill soils and the upper-portion of the alluvial soils generally possess varying strengths and unfavorable consolidation/collapse characteristics. These soils, in their present condition, are not considered suitable for support of the foundation loads of the new structure.
- Remedial grading will be necessary to remove the undocumented fill soils in their entirety and the upper portion of the alluvial soils and replace these materials as compacted structural fill soils.

Site Preparation

- Initial site preparation should include removal of all vegetation, including tree root masses and any organic topsoil.
- Remedial grading is recommended within the proposed building pad area to remove the undocumented fill soils, which extend to depths of 2½ to 3± feet at the boring locations, in their entirety. At a minimum, the building pad area should be overexcavated to a depth of at least 4 feet below existing grade and to a depth of at least 3 feet below proposed pad grade, whichever is greater. Overexcavation within the foundation areas is recommended to extend to a depth of at least 3 feet below proposed foundation bearing grade.
- After overexcavation has been completed, the subgrade soils should be evaluated by the geotechnical engineer to identify any additional soils that should be overexcavated. The resulting subgrade should then be scarified to a depth of 12 inches, moisture conditioned or air dried to 2 to 4 percent above optimum, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The previously excavated soils may then be replaced as compacted structural fill.
- The new pavement and flatwork subgrade soils are recommended to be scarified to a depth of 12± inches, moisture conditioned and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density.

Building Foundations

- Conventional shallow foundations, supported in newly placed compacted fill.
- 2,500 lbs/ft^2 maximum allowable soil bearing pressure.
- Reinforcement consisting of at least four (4) No. 5 rebars (2 top and 2 bottom) in strip footings. Additional reinforcement may be necessary for structural considerations.

Building Floor Slab

- Conventional Slab-on-Grade: minimum 6 inches thick.
- Modulus of Subgrade Reaction: k = 100 psi/in.
- Reinforcement is not expected to be necessary for geotechnical considerations. The actual thickness and reinforcement of the floor slab should be determined by the structural engineer.

Pavement Design Recommendations

ASPHALT PAVEMENTS (R=30)					
Materials	**Thickness (inches)**				
	Auto Parking and Auto Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic			
		TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
Asphalt Concrete	3	3½	4	5	5½
Aggregate Base	6	8	10	11	13
Compacted Subgrade	12	12	12	12	12

PORTLAND CEMENT CONCRETE PAVEMENTS (R=30)				
Materials	**Thickness (inches)**			
	Autos and Light Truck Traffic (TI = 5.0 to 6.0)	Truck Traffic		
		TI = 7.0	TI = 8.0	TI = 9.0
PCC	5	5½	6½	8
Compacted Subgrade (95% minimum compaction)	12	12	12	12

2.0 SCOPE OF SERVICES

The scope of services performed for this project was in accordance with our Proposal No. 22P198, dated April 19, 2022. The scope of services included a visual site reconnaissance, subsurface exploration, field and laboratory testing, and geotechnical engineering analysis to provide criteria for preparing the design of the building foundations, building floor slab, and parking lot pavements along with site preparation recommendations and construction considerations for the proposed development. The evaluation of the environmental aspects of this site was beyond the scope of services for this geotechnical investigation.

3.0 SITE AND PROJECT DESCRIPTION

3.1 Site Conditions

The subject site is located on the west side of Sherman Road, 950± feet north of McLaughlin Road in Menifee, California. The site is bounded to the north by an industrial building, to the west by single-family residences and vacant lots, to the south by a vacant lot, and to the east by Sherman Road. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 in Appendix A of this report.

The subject site consists of a rectangular-shaped parcel, which totals 11.3± acres in size. The site is developed with an aggregate (sand and gravel) supply company, which includes an office building, 1,200± ft² in size, located in the northeastern corner of the site. The building is a single-story structure of wood-frame construction, presumably supported on conventional shallow foundations, with a concrete slab-on-grade floor. Several soil and/or aggregate stockpiles are located in the south and southwest regions of the site. A concrete loading dock, approximately 4-feet in height, is located in the west-central region of the site. Masonry block wall enclosures are located along the northwestern boundary of the site. Ground surface cover throughout the site generally consists of crushed aggregate base (CAB).

Detailed topographic information was not available at the time of this report. Based on elevations obtained from Google Earth and visual observations made at the time of the subsurface investigation, the overall site slopes downward to the west at a gradient of less than 1± percent.

3.2 Proposed Development

Based on the conceptual site plan provided to our office by the client, the site will be developed with one (1) industrial building. The new building will be located in the west-central area of the site and will be 261,420± ft² in size. The building will be constructed with dock-high doors along a portion of the east building wall. The building will be surrounded by asphaltic concrete (AC) pavements in the parking and drive lanes, Portland cement concrete (PCC) pavements in the loading dock areas, and concrete flatwork with limited areas of landscape planters throughout.

Detailed structural information has not been provided. It is assumed the building will be of tilt-up concrete construction, typically supported on conventional shallow foundations with a concrete slab-on-grade floor. Based on the assumed construction, maximum column and wall loads are expected to be on the order of 100 kips and 4 to 7 kips per linear foot, respectively.

No significant amounts of below grade construction, such as crawl spaces or new basements, are expected to be included in the proposed development. Based on the assumed topography, cuts and fills of up to 4± feet are expected to be necessary to achieve the proposed site grades.

4.0 SUBSURFACE EXPLORATION

4.1 Scope of Exploration/Sampling Methods

The subsurface exploration for this project consisted of six (6) borings advanced to depths of 15 to 25± feet below the existing site grades. All of the borings were logged during drilling by a member of our staff.

The borings were advanced with hollow-stem augers, by a limited-access, track-mounted drilling rig. Representative bulk and relatively undisturbed soil samples were taken during drilling. Relatively undisturbed soil samples were taken with a split barrel "California Sampler" containing a series of one inch long, 2.416± inch diameter brass rings. This sampling method is described in ASTM Test Method D-3550. In-situ samples were also taken using a 1.4± inch inside diameter split spoon sampler, in general accordance with ASTM D-1586. Both of these samplers are driven into the ground with successive blows of a 140-pound weight falling 30 inches. The blow counts obtained during driving are recorded for further analysis. Bulk samples were collected in plastic bags to retain their original moisture content. The relatively undisturbed ring samples were placed in molded plastic sleeves that were then sealed and transported to our laboratory.

The approximate locations of the borings are indicated on the Boring Location Plan, included as Plate 2 in Appendix A of this report. The Boring Logs, which illustrate the conditions encountered at the boring locations, as well as the results of some of the laboratory testing, are included in Appendix B.

4.2 Geotechnical Conditions

Artificial Fill

Artificial fill soils were encountered at the ground surface at Boring Nos. B-2, B-3, B-5 and B-6, extending to depths of 2½ to 3± feet below ground surface. The fill soils generally consist of medium dense to dense clayey fine sand and silty fine sands with varying medium to coarse sand and gravel content, and stiff clayey silts. The fill soils possess a disturbed and mottled appearance, resulting in their classification as artificial fill.

Older Alluvium

Older alluvium was encountered beneath the artificial fill soils or at the ground surface at all of the boring locations, extending to at least the maximum depth explored of 25± feet below ground surface. The alluvial soils generally consist of medium dense to very dense silty fine to coarse sands, clayey fine to medium sands and fine sandy silts, and very stiff to hard fine sandy clays, silty clays and clayey silts with varying fine to coarse sand content.

Groundwater

Free water was not encountered during the drilling of any of the borings. Based on the lack of any water within the borings, and the moisture contents of the recovered soil samples, the static groundwater table is considered to have existed at a depth in excess of 25± feet at the time of the subsurface exploration.

Recent water level data was obtained from the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. One monitoring well on record is located 600± feet northwest of the site. Water level readings within this monitoring well indicates a high groundwater level of 66± feet below ground surface in March 2022.

5.0 LABORATORY TESTING

The soil samples recovered from the subsurface exploration were returned to our laboratory for further testing to determine selected physical and engineering properties of the soils. The tests are briefly discussed below. It should be noted that the test results are specific to the actual samples tested, and variations could be expected at other locations and depths.

Classification

All recovered soil samples were classified using the Unified Soil Classification System (USCS), in accordance with ASTM D-2488. Field identifications were then supplemented with additional visual classifications and/or by laboratory testing. The USCS classifications are shown on the Boring Logs and are periodically referenced throughout this report.

Density and Moisture Content

The density has been determined for selected relatively undisturbed ring samples. These densities were determined in general accordance with the method presented in ASTM D-2937. The results are recorded as dry unit weight in pounds per cubic foot. The moisture contents are determined in accordance with ASTM D-2216, and are expressed as a percentage of the dry weight. These test results are presented on the Boring Logs.

Consolidation

Selected soil samples have been tested to determine their consolidation and collapse potential, in accordance with ASTM D-2435. The testing apparatus is designed to accept either natural or remolded samples in a one-inch high ring, approximately 2.416 inches in diameter. Each sample is then loaded incrementally in a geometric progression and the resulting deflection is recorded at selected time intervals. Porous stones are in contact with the top and bottom of the sample to permit the addition or release of pore water. The samples are typically inundated with water at an intermediate load to determine their potential for collapse or heave. The results of the consolidation testing are plotted on Plates C-1 through C-4 in Appendix C of this report.

Maximum Dry Density and Optimum Moisture Content

A representative bulk sample has been tested for its maximum dry density and optimum moisture content. The results have been obtained using the Modified Proctor procedure, per ASTM D-1557, and are presented on Plate C-5 in Appendix C of this report. These tests are generally used to with compare the dry densities of undisturbed field samples, and for later compaction testing. Additional testing of other soil types or soil mixes may be necessary at a later date.

Expansion Index

The expansion potential of the on-site soils was evaluated in general accordance with ASTM D-4829. The testing apparatus is designed to accept a 4-inch diameter, 1-in high, remolded sample. The sample is initially remolded to 50± 1 percent saturation and then loaded with a surcharge equivalent to 144 pounds per square foot. The sample is then inundated with water, and allowed

to swell against the surcharge. The resultant swell or consolidation is recorded after a 24-hour period. The results of the EI testing are as follows:

Sample Identification	Expansion Index	Expansive Potential
B-4 @ 0 to 5 feet	36	Low

Soluble Sulfates

Two (2) representative samples of the near-surface soils have been submitted to a subcontracted analytical laboratory for evaluation of soluble sulfate content. Soluble sulfates are naturally present in soils, and if the concentration is high enough, can result in degradation of concrete which comes into contact with these soils. The results of the soluble sulfate testing is presented below, and are discussed further in a subsequent section of this report.

Sample Identification	Soluble Sulfates (%)	Severity
B-4 @ 0 to 5 feet	0.034	Not Applicable (S0)
B-5 @ 0 to 5 feet	0.027	Not Applicable (S0)

Corrosivity Testing

Two representative bulk samples of the near-surface soils were submitted to a subcontracted corrosion engineering laboratory to determine if the near-surface soils possess corrosive characteristics with respect to common construction materials. The corrosivity testing included an evaluation of the electrical resistivity, pH, and chloride concentrations of the soils, as well as other tests. The results of some of these tests are presented below.

Sample Identification	Saturated Resistivity (ohm-cm)	pH	Chlorides (mg/kg)	Nitrates (mg/kg)
B-4 @ 0 to 5 feet	1,005	7.8	142.4	220.6
B-5 @ 0 to 5 feet	1,072	8.6	96.3	160.3

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of our review, field exploration, laboratory testing and geotechnical analysis, the proposed development is considered feasible from a geotechnical standpoint. The recommendations contained in this report should be taken into the design, construction, and grading considerations.

The recommendations are contingent upon all grading and foundation construction activities being monitored by the geotechnical engineer of record. The recommendations are provided with the assumption that an adequate program of client consultation, construction monitoring, and testing will be performed during the final design and construction phases to verify compliance with these recommendations. Maintaining Southern California Geotechnical, Inc., (SCG) as the geotechnical consultant from the beginning to the end of the project will provide continuity of services. The geotechnical engineering firm providing testing and observation services shall assume the responsibility of Geotechnical Engineer of Record.

The Grading Guide Specifications, included as Appendix D, should be considered part of this report, and should be incorporated into the project specifications. The contractor and/or owner of the development should bring to the attention of the geotechnical engineer any conditions that differ from those stated in this report, or which may be detrimental for the development.

6.1 Seismic Design Considerations

The subject site is located in an area which is subject to strong ground motions due to earthquakes. The performance of a site-specific seismic hazards analysis was beyond the scope of this investigation. However, numerous faults capable of producing significant ground motions are located near the subject site. Due to economic considerations, it is not generally considered reasonable to design a structure that is not susceptible to earthquake damage. Therefore, significant damage to structures may be unavoidable during large earthquakes. The proposed structures should, however, be designed to resist structural collapse and thereby provide reasonable protection from serious injury, catastrophic property damage and loss of life.

Faulting and Seismicity

Research of available maps indicates that the subject site is not located within an Alquist-Priolo Earthquake Fault Zone. Furthermore, SCG did not identify any evidence of faulting during the geotechnical investigation. Therefore, the possibility of significant fault rupture on the site is considered to be low.

The potential for other geologic hazards such as seismically induced settlement, lateral spreading, tsunamis, inundation, seiches, flooding, and subsidence affecting the site is considered low.

Seismic Design Parameters

The 2019 California Building Code (CBC) provides procedures for earthquake resistant structural design that include considerations for on-site soil conditions, occupancy, and the configuration of

the structure including the structural system and height. The seismic design parameters presented below are based on the soil profile and the proximity of known faults with respect to the subject site.

Based on standards in place at the time of this report, the proposed development is expected to be designed in accordance with the requirements of the 2019 edition of the California Building Code (CBC), which was adopted on January 1, 2020.

The 2019 CBC Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool, a web-based software application available at the website www.seismicmaps.org. This software application calculates seismic design parameters in accordance with several building code reference documents, including ASCE 7-16, upon which the 2019 CBC is based. The application utilizes a database of risk-targeted maximum considered earthquake (MCE_R) site accelerations at 0.01-degree intervals for each of the code documents. The tables below were created using data obtained from the application. The output generated from this program is included as Plate E-1 in Appendix E of this report.

The 2019 CBC requires that a site-specific ground motion study be performed in accordance with Section 11.4.8 of ASCE 7-16 for Site Class D sites with a mapped S_1 value greater than 0.2. However, Section 11.4.8 of ASCE 7-16 also indicates an exception to the requirement for a site-specific ground motion hazard analysis for certain structures on Site Class D sites. The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11 of ASCE 7-16) indicates that "In general, this exception effectively limits the requirements for site-specific hazard analysis to very tall and or flexible structures at Site Class D sites." **Based on our understanding of the proposed development, the seismic design parameters presented below were calculated assuming that the exception in Section 11.4.8 applies to the proposed structure at this site. However, the structural engineer should verify that this exception is applicable to the proposed structure.** Based on the exception, the spectral response accelerations presented below were calculated using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 16.4.4 of the 2019 CBC.

2019 CBC SEISMIC DESIGN PARAMETERS

Parameter		Value
Mapped Spectral Acceleration at 0.2 sec Period	S_S	1.417
Mapped Spectral Acceleration at 1.0 sec Period	S_1	0.526
Site Class	---	D
Site Modified Spectral Acceleration at 0.2 sec Period	S_{MS}	1.417
Site Modified Spectral Acceleration at 1.0 sec Period	S_{M1}	0.933
Design Spectral Acceleration at 0.2 sec Period	S_{DS}	0.945
Design Spectral Acceleration at 1.0 sec Period	S_{D1}	0.622

It should be noted that the site coefficient F_v and the parameters S_{M1} and S_{D1} were not included in the SEAOC/OSHPD Seismic Design Maps Tool output for the 2019 CBC. We calculated these parameters-based on Table 1613.2.3(2) in Section 16.4.4 of the 2019 CBC using the value of S_1

obtained from the Seismic Design Maps Tool, assuming that a site-specific ground motion hazards analysis is not required for the proposed buildings at this site.

Liquefaction

Liquefaction is the loss of strength in generally cohesionless, saturated soils when the pore-water pressure induced in the soil by a seismic event becomes equal to or exceeds the overburden pressure. The primary factors which influence the potential for liquefaction include groundwater table elevation, soil type and plasticity characteristics, relative density of the soil, initial confining pressure, and intensity and duration of ground shaking. The depth within which the occurrence of liquefaction may impact surface improvements is generally identified as the upper 50 feet below the existing ground surface. Liquefaction potential is greater in saturated, loose, poorly graded fine sands with a mean (d_{50}) grain size in the range of 0.075 to 0.2 mm (Seed and Idriss, 1971). Non-sensitive clayey (cohesive) soils which possess a plasticity index of at least 18 (Bray and Sancio, 2006) are generally not considered to be susceptible to liquefaction, nor are those soils which are above the historic static groundwater table.

The Riverside County GIS website indicates that the subject site is located within a zone of low liquefaction susceptibility. In addition, the subsurface conditions encountered at the boring locations are not considered to be conducive to liquefaction. These conditions consist of moderate to high strength older native alluvial soils and no evidence of a long-term groundwater table within 25 feet of the ground surface. In addition, research of available well data indicates that the groundwater depths in the area of the site are more than 66 feet below grade. Based on these considerations, liquefaction is not considered to be a design concern for this project.

6.2 Geotechnical Design Considerations

General

Most of the borings encountered artificial fill materials, extending to depths of 2½ to 3± feet. Based on their strength characteristics and a lack of documentation regarding the placement and compaction of the existing fill materials, these soils are considered to consist of undocumented fill. In addition, the near-surface alluvial soils within the upper 3 to 4± feet possess a potential for moderate settlement when exposed to load increases in the range of those that will be exerted by the new foundations. The undocumented fill soils and the near-surface native alluvium are not considered to be suitable for the support of the foundation and floor slab loads of the proposed structure. Based on these conditions, remedial grading is considered warranted within the proposed building area to completely remove the existing artificial fill soils and the upper portion of the near-surface native alluvium and replace these soils as compacted structural fill.

Settlement

The recommended remedial grading will remove all of the existing fill soils and a portion of the near-surface native alluvium, and replace these soils as compacted structural fill. The native soils that will remain in place below the recommended depth of overexcavation possess favorable consolidation and collapse characteristics and will not be subject to significant load increases from the foundations of the new structure. Provided that the recommended remedial grading is

completed, the post-construction settlement of the proposed structure is expected to be within tolerable limits.

Expansion

Laboratory testing performed on a representative sample of the near-surface soils indicates that these materials possess a low expansion potential (EI = 36). Based on the presence of potentially expansive soils at this site, care should be given to proper moisture conditioning the building pad subgrade soils to a moisture content of 2 to 4 percent above the ASTM D-1557 optimum during site grading. It is recommended that additional expansion index testing be conducted at the completion of rough grading to verify the expansion potential of the as-graded building pad.

Soluble Sulfates

The results of the soluble sulfate testing indicate that the selected samples of the on-site soils contain concentrations of soluble sulfates that correspond to Class S0 with respect to the American Concrete Institute (ACI) Publication 318 Building Code Requirements for Structural Concrete and Commentary. Therefore, specialized concrete mix designs are not considered to be necessary, with regard to sulfate protection purposes. It is, however, recommended that additional soluble sulfate testing be conducted at the completion of rough grading to confirm the soluble sulfate concentrations of the soils which are present at pad grade within the building area.

Corrosion Potential

The results of laboratory testing indicate that representative samples of the on-site soils possess saturated minimum resistivity values ranging from 1,005 to 1,072 ohm-cm, and pH values of 7.8 to 8.6. These test results have been evaluated in accordance with guidelines published by the Ductile Iron Pipe Research Association (DIPRA). The DIPRA guidelines consist of a point system by which characteristics of the soils are used to quantify the corrosivity characteristics of the site. Sulfides, and redox potential are factors that are also used in the evaluation procedure. We have evaluated the corrosivity characteristics of the on-site soils using resistivity, pH, and moisture content. **Based on these factors, and utilizing the DIPRA procedure, the on-site soils are considered to be highly corrosive to ductile iron pipe. Based on these test results, and since SCG does not practice in the area of corrosion engineering, the client may also wish to contact a corrosion engineer to provide a more thorough evaluation.**

Chlorides

Low to moderate (96.3 to 142.4 mg/kg) concentration of chlorides were detected in the samples submitted for corrosivity testing. In general, soils possessing chloride concentrations in excess of 500 parts per million (ppm) are considered to be corrosive with respect to steel reinforcement within reinforced concrete. Based on the lack of significant chlorides in the tested sample, the site is considered to have a C1 chloride exposure in accordance with the American Concrete Institute (ACI) Publication 318 Building Code Requirements for Structural Concrete and Commentary. Therefore, a specialized concrete mix design for reinforced concrete for protection against chloride exposure is not considered warranted.

Nitrates

Nitrates present in soil can be corrosive to copper tubing at concentrations greater than 50 mg/kg. The tested samples possess nitrate concentrations ranging from 160.3 to 220.6 mg/kg. Based on this test result, the on-site soils are considered to be corrosive to copper pipe. **Since SCG does not practice in the area of corrosion engineering, we recommend that the client contact a corrosion engineer to provide recommendations for the protection of copper tubing/pipe in contact with the on-site soils.**

Shrinkage/Subsidence

Based on the results of the laboratory testing, removal and recompaction of the near-surface artificial fill soils and native alluvium will result in an average shrinkage of 0 to 6 percent. The potential shrinkage estimate is based on dry density testing performed on small-diameter samples taken at the boring locations. If a more accurate and precise shrinkage estimate is desired, SCG can perform a shrinkage study involving several excavated test-pits where in-place densities are determined using in-situ testing methods instead of laboratory density testing on small-diameter samples. Please contact SCG for details and a cost estimate regarding a shrinkage study, if desired.

Minor ground subsidence is expected to occur in the soils below the zone of removal, due to settlement and machinery working. The subsidence is estimated to be 0.1 feet. This estimate may be used for grading in areas that are underlain by native alluvial soils.

These estimates are based on previous experience and the subsurface conditions encountered at the boring locations. The actual amount of subsidence is expected to be variable and will be dependent on the type of machinery used, repetitions of use, and dynamic effects, all of which are difficult to assess precisely.

Grading and Foundation Plan Review

It is recommended that we be provided with copies of the finalized grading and foundation plans, when they become available, for review with regard to the conclusions, recommendations, and assumptions contained within this report.

6.3 Site Grading Recommendations

The grading recommendations presented below are based on the subsurface conditions encountered at the boring locations and our understanding of the proposed development. We recommend that all grading activities be completed in accordance with the Grading Guide Specifications included as Appendix D of this report, unless superseded by site-specific recommendations presented below.

Site Stripping and Demolition

Demolition of the existing structure and pavements should include all foundations, floor slabs, pavements, septic systems, utilities and any other subsurface improvements that will not remain in place with the new development. Debris resultant from demolition should be disposed of off-

site. Alternatively, concrete and asphalt debris may be pulverized to a maximum 2-inch particle size, well-mixed with the sandy on-site soils, and incorporated into new structural fills or it may be processed to create crushed miscellaneous base (CMB).

Initial site preparation should also include stripping of any surficial vegetation and organic soils. Based on conditions encountered at the time of the subsurface exploration, minor striping and removal of some trees in the landscaped areas along the property lines and within landscaped planters will be required. Any vegetation, organic topsoil, and all tree root masses should be removed during site stripping. These materials should be disposed of off-site. The actual extent of site stripping should be determined in the field by the geotechnical engineer, based on the organic content and stability of the materials encountered. Any soils disturbed during demolition should be removed and replaced with compacted fill soils.

The aggregate base material which currently covers the overall all site can be re-utilized for new site fills.

Treatment of Existing Soils: Building Pad

Remedial grading should be performed within the proposed building pad area in order to remove all of the existing undocumented fill soils and a portion of the near-surface native alluvium. The undocumented fill soils extend to depths of 2½ to 3± feet at the boring locations within the building area. The soils within the proposed building pad area should also be overexcavated to a depth of 4 feet below existing grade and to a depth of at least 3 feet below proposed building pad subgrade elevation. The proposed foundation influence zones within the industrial building should be overexcavated to a depth of at least 3 feet below proposed foundation bearing grade.

The overexcavation areas should extend at least 5 feet beyond the building and foundation perimeters, and to an extent equal to the depth of fill below the new foundations. If the proposed structure incorporates any exterior columns (such as for a canopy or overhang) the area of overexcavation should also encompass these areas.

Following completion of the overexcavation, the subgrade soils within the overexcavation areas should be evaluated by the geotechnical engineer to verify their suitability to serve as the structural fill subgrade, as well as to support the foundation loads of the new structure. This evaluation should include proofrolling and probing to identify any soft, loose, or otherwise unstable soils that must be removed. Some localized areas of deeper excavation may be required if additional fill or loose, porous, or low-density native soils are encountered at the base of the overexcavation. Deeper undocumented fill soils may also exist at locations not explored by our borings.

After a suitable overexcavation subgrade has been achieved, the exposed soils should be scarified to a depth of at least 12 inches, and moisture conditioned to at 2 to 4 percent above optimum moisture content, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. The previously excavated soils may then be replaced as compacted structural fill.

Treatment of Existing Soils: Retaining Walls and Site Walls

The existing soils within the areas of proposed retaining and non-retaining site walls should be overexcavated to a depth of at least 2 feet below foundation bearing grade and replaced as

compacted structural fill. Any existing fill soils in these areas should be removed. Subgrades for erection pads for concrete tilt-up walls are considered to be a part of the foundation system and should also be overexcavated. Additional overexcavation may be required if porous or collapsible alluvium is encountered, as discussed above. The overexcavation subgrade soils should be evaluated by the geotechnical engineer prior to scarifying, moisture conditioning and recompacting the upper 12 inches of exposed subgrade soils. The previously excavated soils may then be replaced as compacted structural fill.

If the full lateral extent of overexcavation is not achievable for the proposed walls, the foundations should be redesigned using a lower bearing pressure. The geotechnical engineer of record should be contacted for recommendations pertaining to this type of condition.

Treatment of Existing Soils: Parking and Drive Areas

Based on economic considerations, overexcavation of the undocumented fill soils and near-surface alluvial soils in the new parking and drive areas is not considered warranted, with the exception of areas where lower strength, or unstable soils are identified by the geotechnical engineer during grading.

Subgrade preparation in the new parking and drive areas should initially consist of removal of all soils disturbed during stripping. The geotechnical engineer should then evaluate the subgrade to identify any areas of additional unsuitable soils. The subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 2 to 4 percent above optimum, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of artificial fill and variable strength alluvial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

The grading recommendations presented above for the proposed parking and drive areas assume that the owner and/or developer can tolerate minor amounts of settlement within the proposed parking areas. The grading recommendations presented above do not completely mitigate the extent of existing undocumented fill soils in the parking areas. As such, settlement and associated pavement distress could occur. Typically, repair of such distressed areas involves significantly lower costs than completely mitigating these soils at the time of construction. If the owner cannot tolerate the risk of such settlements, the parking and drive areas should be overexcavated to a depth of 2 feet below proposed pavement subgrade elevation, with the resulting soils replaced as compacted structural fill.

Treatment of Existing Soils: Flatwork Areas

Subgrade preparation in the new flatwork areas should initially consist of removal of soils disturbed during stripping operations. The geotechnical engineer should then evaluate the subgrade to identify areas of additional unsuitable soils. The subgrade soils should then be scarified to a depth of 12± inches, moisture conditioned to 2 to 4 percent above optimum, and recompacted to at least 90 percent of the ASTM D-1557 maximum dry density. Based on the presence of variable strength alluvial soils throughout the site, it is expected that some isolated areas of additional overexcavation may be required to remove zones of lower strength, unsuitable soils.

Fill Placement

- Fill soils should be placed in thin (6± inches), near-horizontal lifts, moisture conditioned to 2 to 4 percent above the optimum moisture content, and compacted.
- On-site soils may be used for fill provided they are cleaned of any debris to the satisfaction of the geotechnical engineer.
- All grading and fill placement activities should be completed in accordance with the requirements of the 2019 CBC and the grading code of the city of Menifee and/or the county of Riverside.
- All fill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. Fill soils should be well mixed.
- Compaction tests should be performed periodically by the geotechnical engineer as random verification of compaction and moisture content. These tests are intended to aid the contractor. Since the tests are taken at discrete locations and depths, they may not be indicative of the entire fill and therefore should not relieve the contractor of his responsibility to meet the job specifications.

Imported Structural Fill

All imported structural fill should consist of very low expansive (EI < 20), well graded soils possessing at least 10 percent fines (that portion of the sample passing the No. 200 sieve). Additional specifications for structural fill are presented in the Grading Guide Specifications, included as Appendix D.

Utility Trench Backfill

In general, all utility trench backfill soils should be compacted to at least 90 percent of the ASTM D-1557 maximum dry density. As an alternative, a clean sand (minimum Sand Equivalent of 30) may be placed within trenches and compacted in place (jetting or flooding is not recommended). Compacted trench backfill should conform to the requirements of the local grading code, and more restrictive requirements may be indicated by the city of Menifee and/or the county of Riverside. All utility trench backfills should be witnessed by the geotechnical engineer. The trench backfill soils should be compaction tested where possible; probed and visually evaluated elsewhere.

Utility trenches which parallel a footing, and extending below a 1h:1v plane projected from the outside edge of the footing should be backfilled with structural fill soils, compacted to at least 90 percent of the ASTM D-1557 standard. Pea gravel backfill should not be used for these trenches.

6.4 Construction Considerations

Excavation Considerations

The near surface soils generally consist of moderate strength silty to clayey fine sands and fine sandy silts with minor clay content. These upper materials may be subject to minor caving within shallow excavations. Where caving occurs within shallow excavations, flattened excavation slopes may be sufficient to provide excavation stability. On a preliminary basis, the inclination of

temporary slopes should not exceed 2h:1v for sands and 1.5h:1v for moderate strength clays, or the Cal-OSHA excavation guidelines for the type of soil encountered. Deeper excavations may require some form of external stabilization such as shoring or bracing or flattened/stepped excavations. Maintaining adequate moisture content within the near-surface soils will improve excavation stability. Excavation activities on this site should be conducted in accordance with Cal-OSHA regulations.

Moisture Sensitive Subgrade Soils

Most of the near surface soils possess appreciable silt and clay content and may become unstable if exposed to significant moisture infiltration or disturbance by construction traffic. In addition, based on their granular content, some of the on-site soils will also be susceptible to erosion. The site should, therefore, be graded to prevent ponding of surface water and to prevent water from running into excavations.

If the construction schedule dictates that site grading will occur during a period of wet weather, allowances should be made for costs and delays associated with drying the on-site soils or import of a drier, less moisture sensitive fill material. Grading during wet or cool weather may also increase the depth of overexcavation in the pad area.

Groundwater

The static groundwater table is considered to exist at a depth greater than 25± feet below existing grade. Therefore, groundwater is not expected to impact the grading or foundation construction activities.

6.5 Foundation Design and Construction

Based on the preceding grading recommendations, it is assumed that the new building pad will be underlain by newly placed structural fill soils extending to depths of at least 3 feet below foundation bearing grade. Based on this subsurface profile, the proposed structure may be supported on shallow foundations.

Foundation Design Parameters

New square and rectangular footings may be designed as follows:

- Maximum, net allowable soil bearing pressure: 2,500 lbs/ft^2.
- Minimum wall/column footing width: 14 inches/24 inches.
- Minimum longitudinal steel reinforcement within strip footings: Four (4) No. 5 rebars (2 top and 2 bottom).
- Minimum foundation embedment: 12 inches into suitable structural fill soils, and at least 18 inches below adjacent exterior grade. Interior column footings may be placed immediately beneath the floor slab.

- It is recommended that the perimeter building foundations be continuous across all exterior doorways. Any flatwork adjacent to the exterior doors should be doweled into the perimeter foundations in a manner determined by the structural engineer.

The allowable bearing pressures presented above may be increased by 1/3 when considering short duration wind or seismic loads. The minimum steel reinforcement recommended above is based on standard geotechnical practice. Additional rigidity may be necessary for structural considerations. The actual design of the foundations should be determined by the structural engineer.

Foundation Construction

The foundation subgrade soils should be evaluated at the time of overexcavation, as discussed in Section 6.3 of this report. It is further recommended that the foundation subgrade soils be evaluated by the geotechnical engineer immediately prior to steel or concrete placement. Soils suitable for direct foundation support should consist of newly placed structural fill compacted at least 90 percent of the ASTM D-1557 maximum dry density. Any unsuitable materials should be removed to a depth of suitable bearing compacted structural fill, with the resulting excavations backfilled with compacted fill soils. As an alternative, lean concrete slurry (500 to 1,500 psi) may be used to backfill such isolated overexcavations.

The foundation subgrade soils should also be properly moisture conditioned to 2 to 4 percent above the Modified Proctor optimum, to a depth of at least 12 inches below bearing grade. Since it is typically not feasible to increase the moisture content of the floor slab and foundation subgrade soils once rough grading has been completed, care should be taken to maintain the moisture content of the building pad subgrade soils throughout the construction process.

Estimated Foundation Settlements

Post-construction total and differential settlements of shallow foundations designed and constructed in accordance with the previously presented recommendations are estimated to be less than 1.0 and 0.5 inches, respectively, under static conditions. Differential movements are expected to occur over a 50-foot span, thereby resulting in an angular distortion of less than 0.002 inches per inch.

Lateral Load Resistance

Lateral load resistance will be developed by a combination of friction acting at the base of foundations and slabs and the passive earth pressure developed by footings below grade. The following friction and passive pressure may be used to resist lateral forces:

- Passive Earth Pressure: 300 lbs/ft^3
- Friction Coefficient: 0.30

These are allowable values, and include a factor of safety. When combining friction and passive resistance, the passive pressure component should be reduced by one-third. These values assume that footings will be poured directly against compacted structural fill soils. The maximum allowable passive pressure is 3,000 lbs/ft^2.

6.6 Floor Slab Design and Construction

Subgrades which will support the new floor slab should be prepared in accordance with the recommendations contained in the ***Site Grading Recommendations*** section of this report. Based on the anticipated grading which will occur at this site, the floor of the proposed structure may be constructed as a conventional slab-on-grade, supported on newly placed structural fill, extending to a depth of at least 3 feet below finished pad grade. Based on geotechnical considerations, the floor slab may be designed as follows:

- Minimum slab thickness: 6 inches.

- Modulus of Subgrade Reaction: 100 psi/in.

- Minimum slab reinforcement: Not required for geotechnical considerations. The actual floor slab reinforcement should be determined by the structural engineer, based upon the imposed loading.

- Slab underlayment: If moisture sensitive floor coverings will be used then minimum slab underlayment should consist of a moisture vapor barrier constructed below the entire slab area where such moisture sensitive floor coverings are expected. The moisture vapor barrier should meet or exceed the Class A rating as defined by ASTM E 1745-97 and have a permeance rating less than 0.01 perms as described in ASTM E 96-95 and ASTM E 154-88. A polyolefin material such as a 15 mil Stego® Wrap Vapor Barrier or equivalent will meet these specifications. The moisture vapor barrier should be properly constructed in accordance with all applicable manufacturer specifications. Given that a rock free subgrade is anticipated and that a capillary break is not required, sand below the barrier is not required. The need for sand and/or the amount of sand above the moisture vapor barrier should be specified by the structural engineer or concrete contractor. The selection of sand above the barrier is not a geotechnical engineering issue and hence outside our purview. Where moisture sensitive floor coverings are not anticipated, the vapor barrier may be eliminated.

- Moisture condition the floor slab subgrade soils to 2 to 4 percent above the Modified Proctor optimum moisture content, to a depth of 12 inches. The moisture content of the floor slab subgrade soils should be verified by the geotechnical engineer within 24 hours prior to concrete placement.

- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.

The actual design of the floor slab should be completed by the structural engineer to verify adequate thickness and reinforcement.

6.7 Exterior Flatwork Design and Construction

Subgrades which will support new exterior slabs-on-grade for sidewalks, patios, and other concrete flatwork, should be prepared in accordance with the recommendations contained in the

Grading Recommendations section of this report. Based on geotechnical considerations, exterior slabs on grade may be designed as follows:

- Minimum slab thickness: 4½ inches.
- Minimum slab reinforcement: No. 3 bars at 18 inches on center, in both directions.
- The flatwork at building entry areas should be structurally connected to the perimeter foundation that is recommended to span across the door opening. This recommendation is designed to reduce the potential for differential movement at this joint.
- Moisture condition the flatwork subgrade soils to at least 2 to 4 percent of optimum moisture content, to a depth of at least 12 inches. Adequate moisture conditioning should be verified by the geotechnical engineer 24 hours prior to concrete placement.
- Proper concrete curing techniques should be utilized to reduce the potential for slab curling or the formation of excessive shrinkage cracks.
- Control joints should be provided at a maximum spacing of 8 feet on center in two directions for slabs and at 6 feet on center for sidewalks. Control joints are intended to direct cracking. Minor cracking of exterior concrete slabs on grade should be expected.

Expansion or felt joints should be used at the interface of exterior slabs on grade and any fixed structures to permit relative movement.

6.8 Retaining Wall Design and Construction

Although not indicated on the site plan, some small (less than 6 feet in height) retaining walls may be required in truck court area and to facilitate the new site grades. The parameters recommended for use in the design of these walls are presented below.

Retaining Wall Design Parameters

Based on the soil conditions encountered at the boring locations, the following parameters may be used in the design of new retaining walls for this site. We have provided parameters assuming the use of on-site soils for retaining wall backfill. The on-site soils generally consist of silty sands, sandy silts, and clayey sands, with some zones of clayey silts and silty clays. Based on their classifications, the on-site silty sands, sandy silts and clayey sands are expected to possess a friction angle of at least 29 degrees when compacted to 90 percent of the ASTM-1557 maximum dry density. **The clayey silts and silty clays are not recommended to be used as retaining wall backfill.**

If desired, SCG could provide design parameters for an alternative select backfill material behind the retaining walls. The use of select backfill material could result in lower lateral earth pressures. In order to use the design parameters for the imported select fill, this material must be placed within the entire active failure wedge. This wedge is defined as extending from the heel of the retaining wall upwards at an angle of approximately 60° from horizontal. If select backfill material

behind the retaining wall is desired, SCG should be contacted for supplementary recommendations.

RETAINING WALL DESIGN PARAMETERS

Design Parameter		**Soil Type**
		On-Site Silty Sands, Sandy Silts, Clayey Sands
Internal Friction Angle (ϕ)		29°
Unit Weight		133 lbs/ft^3
Equivalent Fluid Pressure:	Active Condition (level backfill)	46 lbs/ft^3
	Active Condition (2h:1v backfill)	77 lbs/ft^3
	At-Rest Condition (level backfill)	69 lbs/ft^3

Regardless of the backfill type, the walls should be designed using a soil-footing coefficient of friction of 0.30 and an equivalent passive pressure of 300 lbs/ft^3. The structural engineer should incorporate appropriate factors of safety in the design of the retaining walls.

The active earth pressure may be used for the design of retaining walls that do not directly support structures or support soils that in turn support structures and which will be allowed to deflect. The at-rest earth pressure should be used for walls that will not be allowed to deflect such as those which will support foundation bearing soils, or which will support foundation loads directly.

Where the soils on the toe side of the retaining wall are not covered by a "hard" surface such as a structure or pavement, the upper 1 foot of soil should be neglected when calculating passive resistance due to the potential for the material to become disturbed or degraded during the life of the structure.

Seismic Lateral Earth Pressures

In accordance with the 2019 CBC, any retaining walls more than 6 feet in height must be designed for seismic lateral earth pressures. If walls 6 feet or more are required for this site, the geotechnical engineer should be contacted for supplementary seismic lateral earth pressure recommendations.

Retaining Wall Foundation Design

The retaining wall foundations should be supported within newly placed compacted structural fill, extending to a depth of at least 2 feet below proposed foundation bearing grade. Foundations to support new retaining walls should be designed in accordance with the general Foundation Design Parameters presented in a previous section of this report.

Backfill Material

On-site soils may be used to backfill the retaining walls. However, all backfill material placed within 3 feet of the back-wall face should have a particle size no greater than 3 inches. **The on-site clayey silts and silty clays are not recommended to be used as retaining wall backfill.** The retaining wall backfill materials should be well-graded.

It is recommended that a properly installed prefabricated drainage composite such as the MiraDRAIN 6000XL (or approved equivalent), which is specifically designed for use behind retaining walls be used. If the drainage composite material is not covered by an impermeable surface, such as a structure or pavement, a 12-inch thick layer of a low permeability soil should be placed over the backfill to reduce surface water migration to the underlying soils. The drainage composite should be separated from the backfill soils by a suitable geotextile, approved by the geotechnical engineer.

All retaining wall backfill should be placed and compacted under engineering-controlled conditions in the necessary layer thicknesses to ensure an in-place density between 90 and 93 percent of the maximum dry density as determined by the Modified Proctor test (ASTM D1557). Care should be taken to avoid over-compaction of the soils behind the retaining walls, and the use of heavy compaction equipment should be avoided.

Subsurface Drainage

As previously indicated, the retaining wall design parameters are based upon drained backfill conditions. Consequently, some form of permanent drainage system will be necessary in conjunction with the appropriate backfill material. Subsurface drainage may consist of either:

- A weep hole drainage system typically consisting of a series of 2-inch diameter holes in the wall situated slightly above the ground surface elevation on the exposed side of the wall and at an approximate 10-foot on-center spacing. Alternatively, 4-inch diameter holes at an approximate 20-foot on-center spacing can be used for this type of drainage system. In addition, the weep holes should include a 2 cubic foot pocket of open graded gravel, surrounded by an approved geotextile fabric, at each weep hole location.

- A 4-inch diameter perforated pipe surrounded by 2 cubic feet of gravel per linear foot of drain placed behind the wall, above the retaining wall footing. The gravel layer should be wrapped in a suitable geotextile fabric to reduce the potential for migration of fines. The footing drain should be extended to daylight or tied into a storm drainage system. The actual design of this type of system should be determined by the civil engineer to verify that the drainage system possesses the adequate capacity and slope for its intended use.

Weep holes or a footing drain will not be required for building stem walls.

6.9 Pavement Design Parameters

Site preparation in the pavement area should be completed as previously recommended in the ***Site Grading Recommendations*** section of this report. The subsequent pavement recommendations assume proper drainage and construction monitoring, and are based on either PCA or CALTRANS design parameters for a twenty (20) year design period. However, these designs also assume a routine pavement maintenance program to obtain the anticipated 20-year pavement service life.

Pavement Subgrades

It is anticipated that the new pavements will be primarily supported on a layer of compacted structural fill, consisting of scarified, thoroughly moisture conditioned and recompacted existing soils. The on-site soils generally consist of silty sands, sandy silts, and clayey sands with some zones of clayey silts and silty clays. These soils are generally considered to possess fair to good pavement support characteristics with estimated R-values ranging from 30 to 40. The subsequent pavement design is therefore based upon an assumed R-value of 30. Any fill material imported to the site should have support characteristics equal to or greater than that of the on-site soils and be placed and compacted under engineering controlled conditions. It is recommended that R-value testing be performed after completion of rough grading. Depending upon the results of the R-value testing, it may be feasible to use thinner pavement sections in some areas of the site.

Asphaltic Concrete

Presented below are the recommended thicknesses for new flexible pavement structures consisting of asphaltic concrete over a granular base. The pavement designs are based on the traffic indices (TI's) indicated. The client and/or civil engineer should verify that these TI's are representative of the anticipated traffic volumes. If the client and/or civil engineer determine that the expected traffic volume will exceed the applicable traffic index, we should be contacted for supplementary recommendations. The design traffic indices equate to the following approximate daily traffic volumes over a 20 year design life, assuming six operational traffic days per week.

Traffic Index	No. of Heavy Trucks per Day
4.0	0
5.0	1
6.0	3
7.0	11
8.0	35
9.0	93

For the purpose of the traffic volumes indicated above, a truck is defined as a 5-axle tractor trailer unit with one 8-kip axle and two 32-kip tandem axles. All of the traffic indices allow for 1,000 automobiles per day.

ASPHALT PAVEMENTS (R=30)					
Materials	**Thickness (inches)**				
	Auto Parking and Auto Drive Lanes (TI = 4.0 to 5.0)	Truck Traffic			
		TI = 6.0	TI = 7.0	TI = 8.0	TI = 9.0
Asphalt Concrete	3	3½	4	5	5½
Aggregate Base	6	8	10	11	13
Compacted Subgrade	12	12	12	12	12

The aggregate base course should be compacted to at least 95 percent of the ASTM D-1557 maximum dry density. The asphaltic concrete should be compacted to at least 95 percent of the Marshall maximum density, as determined by ASTM D-2726. The aggregate base course may consist of crushed aggregate base (CAB) or crushed miscellaneous base (CMB), which is a recycled gravel, asphalt and concrete material. The gradation, R-Value, Sand Equivalent, and Percentage Wear of the CAB or CMB should comply with appropriate specifications contained in the current edition of the "Greenbook" Standard Specifications for Public Works Construction.

Portland Cement Concrete

The preparation of the subgrade soils within concrete pavement areas should be performed as previously described for proposed asphalt pavement areas. The minimum recommended thicknesses for the Portland Cement Concrete pavement sections are as follows:

PORTLAND CEMENT CONCRETE PAVEMENTS (R=30)				
Materials	**Thickness (inches)**			
	Autos and Light Truck Traffic (TI = 5.0 to 6.0)	Truck Traffic		
		TI = 7.0	TI = 8.0	TI = 9.0
PCC	5	5½	6½	8
Compacted Subgrade (95% minimum compaction)	12	12	12	12

The concrete should have a 28-day compressive strength of at least 3,000 psi. The maximum joint spacing within all of the PCC pavements is recommended to be equal to or less than 30 times the pavement thickness.

7.0 GENERAL COMMENTS

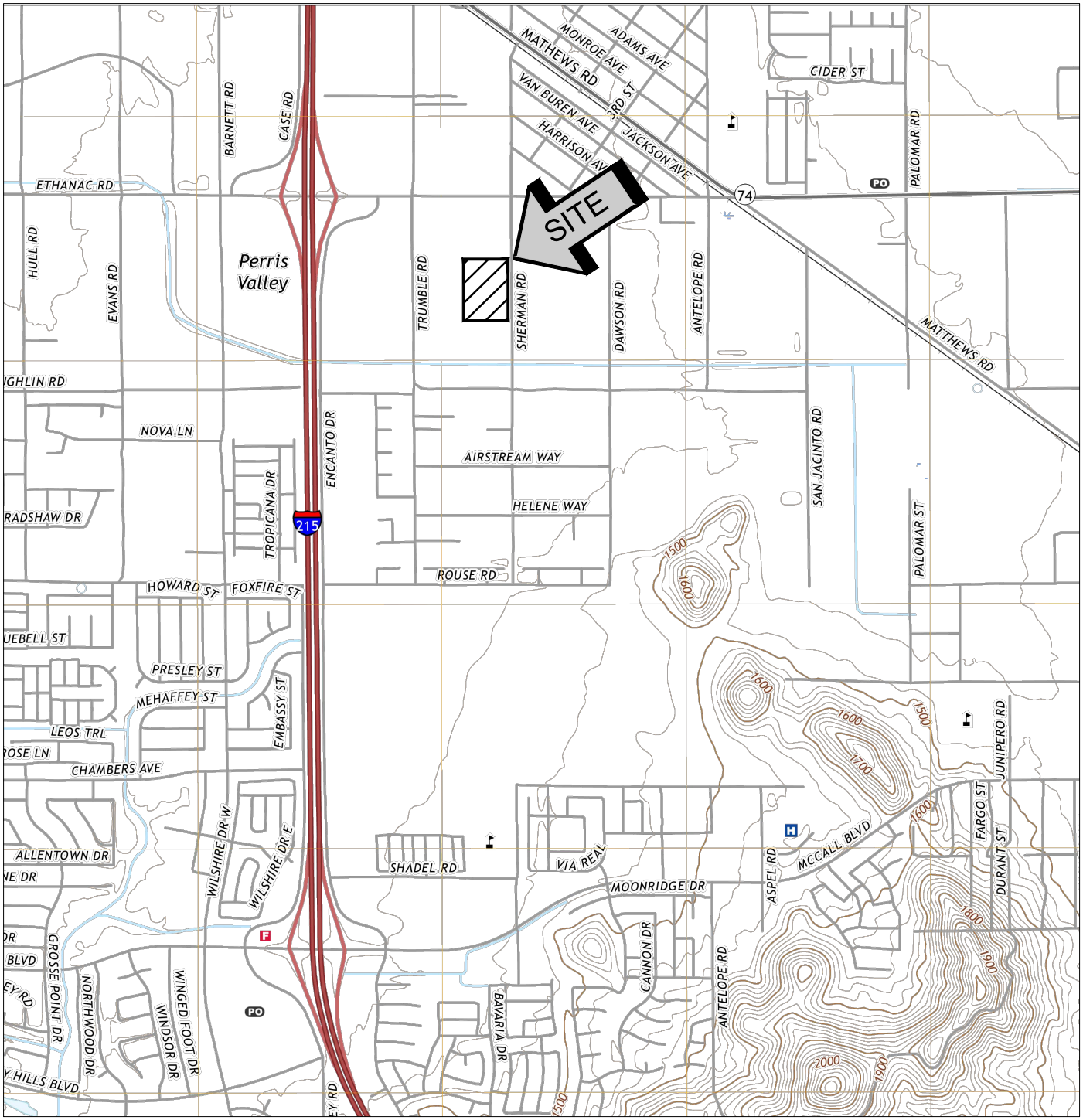
This report has been prepared as an instrument of service for use by the client, in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. This report may be provided to the contractor(s) and other design consultants to disclose information relative to the project. However, this report is not intended to be utilized as a specification in and of itself, without appropriate interpretation by the project architect, civil engineer, and/or structural engineer. The reproduction and distribution of this report must be authorized by the client and Southern California Geotechnical, Inc. Furthermore, any reliance on this report by an unauthorized third party is at such party's sole risk, and we accept no responsibility for damage or loss which may occur. The client(s)' reliance upon this report is subject to the Engineering Services Agreement, incorporated into our proposal for this project.

The analysis of this site was based on a subsurface profile interpolated from limited discrete soil samples. While the materials encountered in the project area are considered to be representative of the total area, some variations should be expected between boring locations and sample depths. If the conditions encountered during construction vary significantly from those detailed herein, we should be contacted immediately to determine if the conditions alter the recommendations contained herein.

This report has been based on assumed or provided characteristics of the proposed development. It is recommended that the owner, client, architect, structural engineer, and civil engineer carefully review these assumptions to ensure that they are consistent with the characteristics of the proposed development. If discrepancies exist, they should be brought to our attention to verify that they do not affect the conclusions and recommendations contained herein. We also recommend that the project plans and specifications be submitted to our office for review to verify that our recommendations have been correctly interpreted.

The analysis, conclusions, and recommendations contained within this report have been promulgated in accordance with generally accepted professional geotechnical engineering practice. No other warranty is implied or expressed.

APPENDIX A



SOURCE: USGS TOPOGRAPHIC MAP OF THE ROMOLAND QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA, 2022

SITE LOCATION MAP

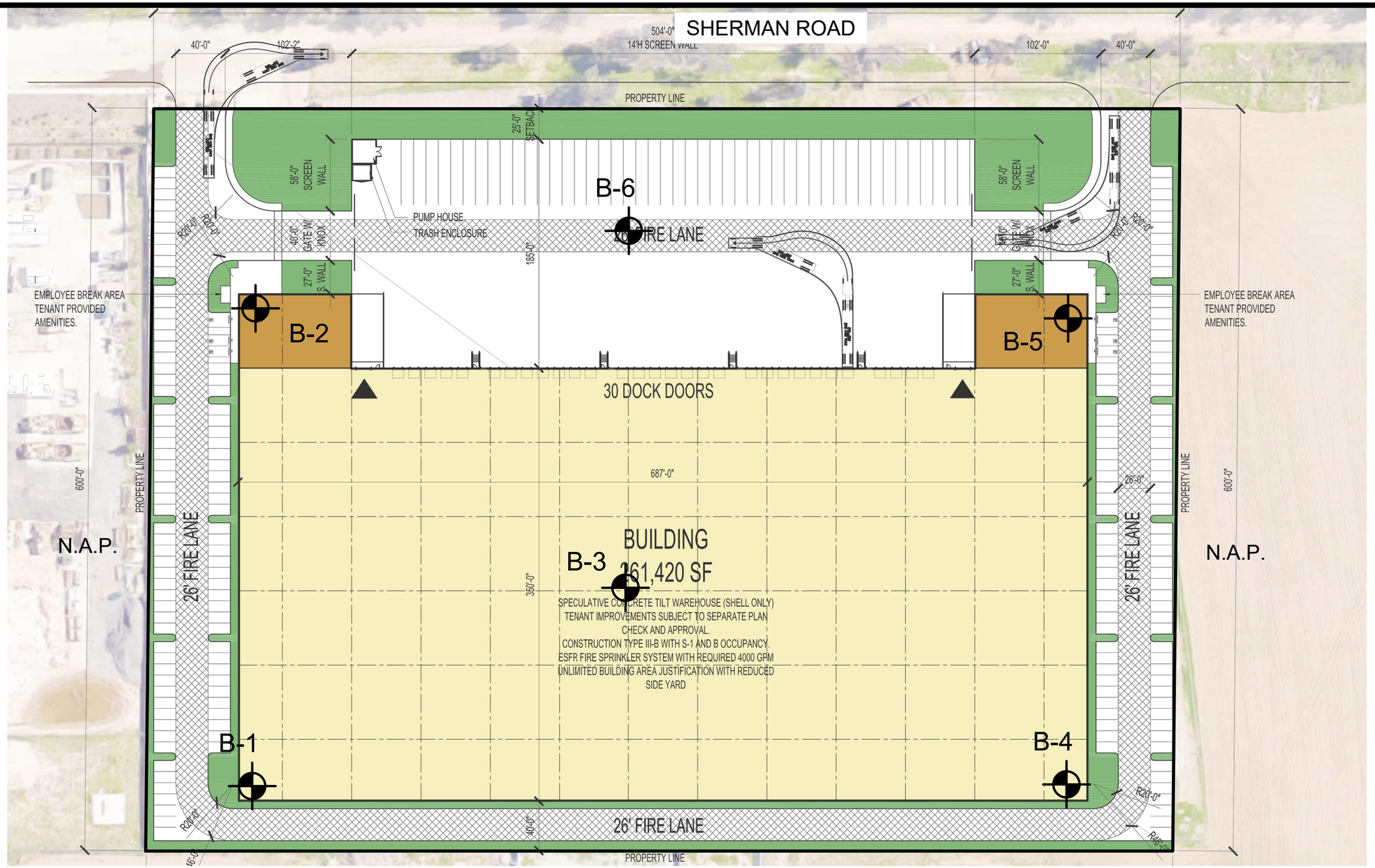
PROPOSED MENIFEE COMMERCE CENTER 4

MENIFEE, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: OS CHKD: RGT	
SCG PROJECT 22G173-1	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

APPROXIMATE BORING LOCATION

NORTH

SoCalGeo

NOTE: SITE PLAN PROVIDED BY THE CLIENT

BORING LOCATION PLAN

MENIFEE COMMERCE CENTER - PHASE III

MENIFEE, CALIFORNIA

SCALE: 1" = 80'

DRAWN: OS
CHKD: RGT

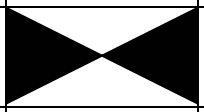
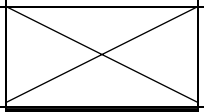
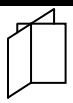
SCG PROJECT
22G173-1

PLATE 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX B

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

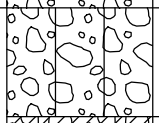
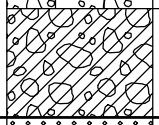
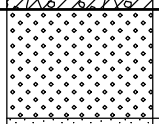
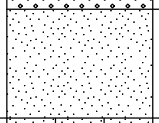
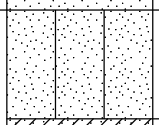
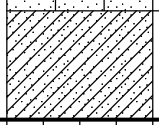
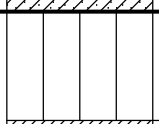
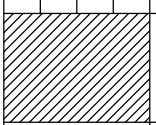
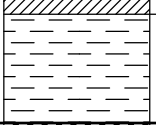
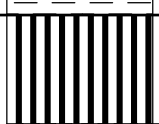
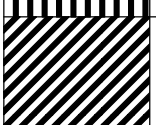
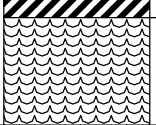
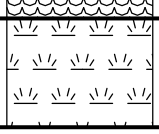
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-1

JOB NO.: 22G173-1
PROJECT: Menifee Commerce Center Phase III
LOCATION: Menifee, California

DRILLING DATE: 4/27/22
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Joey Hernandez

WATER DEPTH: Dry
CAVE DEPTH: 19 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
0		87/10"			OLDER ALLUVIUM: Light Orange Brown Silty fine Sand, little medium to coarse Sand, trace Calcareous nodules, very dense-damp to moist		12					
		85					7					
5		37			Light Brown Clayey fine to coarse Sand, little Silt, little Calcareous nodules, dense to very dense-moist		10					
		87					12					
10					Light Brown fine to coarse Sand, little Clay, trace Silt, little Calcareous nodules, dense-moist							
		34					10					
15					Light Brown fine to coarse Sand, little Silt, dense-moist							
		49					10					
20												
		36					8					
25					Boring Terminated at 25'							

TBL 22G173-1.GPJ SOCALGEO.GDT 6/1/22

TEST BORING LOG

PLATE B-1

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-2

JOB NO.: 22G173-1
PROJECT: Menifee Commerce Center Phase III
LOCATION: Menifee, California

DRILLING DATE: 4/27/22
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Joey Hernandez

WATER DEPTH: Dry
CAVE DEPTH: 15 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		70			FILL: Dark Brown Clayey fine to coarse Sand, little Silt, dense-moist	121	10					
		70			OLDER ALLUVIUM: Brown Clayey fine Sand, little Silt, trace medium to coarse Sand, slightly porous, trace Iron oxide staining, dense to very dense-damp to moist	121	9					
5		50/5"				118	7					
		77			Light Brown fine Sandy Silt, trace to little Clay, dense to very dense-moist	118	11					
		69				124	9					
10												
		33			Light Brown fine to coarse Sand, little Clay, little Calcareous nodules, dense to very dense-moist		9					
15												
		61					10					
20					Boring Terminated at 20'							

TBL 22G173-1.GPJ SOCALGEO.GDT 6/1/22

TEST BORING LOG

PLATE B-2

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-3

JOB NO.: 22G173-1
PROJECT: Menifee Commerce Center Phase III
LOCATION: Menifee, California

DRILLING DATE: 4/27/22
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Joey Hernandez

WATER DEPTH: Dry
CAVE DEPTH: 9 feet
READING TAKEN: At Completion

FIELD RESULTS					DESCRIPTION	LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		43	4.5		FILL: Dark Brown Clayey Silt, little fine to coarse Sand, very stiff-damp	121	7					
		23	4.5		OLDER ALLUVIUM: Dark Brown fine Sandy Clay, little Silt, trace Calcareous nodules, very stiff-very moist	119	14					
5		40			Brown fine Sandy Silt, trace Clay, trace medium Sand, medium dense-moist	115	10					
		60			Brown Clayey fine Sand, little Silt, dense-moist	121	9					
		50/5"			Light Brown fine Sandy Silt, trace Clay, very dense-moist	120	9					
10					Brown Silty fine to coarse Sand, little fine to coarse Gravel, very dense-moist							
		50/5"				120	10					
15					Boring Terminated at 15'							

TBL 22G173-1.GPJ SOCALGEO.GDT 6/1/22

TEST BORING LOG

PLATE B-3

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-4

JOB NO.: 22G173-1
PROJECT: Menifee Commerce Center Phase III
LOCATION: Menifee, California

DRILLING DATE: 4/27/22
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Joey Hernandez

WATER DEPTH: Dry
CAVE DEPTH: 13 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		37			OLDER ALLUVIUM: Dark Brown Clayey fine to medium Sand, little Silt, little fine to coarse Gravel, little Calcareous nodules, medium dense-damp	124	10					EI = 36 @ 0-5'
		70			Light Brown Silty fine Sand, trace medium to coarse Sand, trace Iron oxide staining, trace Calcareous nodules, dense-moist	113	9					
5		89/9"			Light Brown fine Sandy Silt, trace to little Clay, very dense-moist to very moist	121	9					
		77				125	11					
		82				124	13					
10												
		54					11					
15												
					Light Brown Clayey fine to medium Sand, very dense-moist							
		50					10					
20					Boring Terminated at 20'							

TBL 22G173-1.GPJ SOCALGEO.GDT 6/1/22

TEST BORING LOG **PLATE B-4**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-5

JOB NO.: 22G173-1
PROJECT: Menifee Commerce Center Phase III
LOCATION: Menifee, California

DRILLING DATE: 4/27/22
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Joey Hernandez

WATER DEPTH: Dry
CAVE DEPTH: 21 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		16			FILL: Light Gray Brown Silty fine to coarse Sand, medium dense-damp		3					
		14	4.0		OLDER ALLUVIUM: Dark Brown Silty Clay, little fine Sand, stiff-very moist		17					
5		41			OLDER ALLUVIUM: Brown Clayey fine to coarse Sand, trace Silt, little Calcareous nodules, dense-moist		10					
		38					8					
10					Brown fine to coarse Sandy Clay, little Silt, stiff-very moist							
		9	3.0				21					
15					Brown Silty fine Sand, dense-moist							
		49					8					
20					Red Brown fine Sandy Silt, little Clay, very dense-very moist							
		52					19					
25					Boring Terminated at 25'							

TBL 22G173-1.GPJ SOCALGEO.GDT 6/1/22

TEST BORING LOG

PLATE B-5

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. B-6

JOB NO.: 22G173-1
PROJECT: Menifee Commerce Center Phase III
LOCATION: Menifee, California

DRILLING DATE: 4/27/22
DRILLING METHOD: Hollow Stem Auger
LOGGED BY: Joey Hernandez

WATER DEPTH: Dry
CAVE DEPTH: 17 feet
READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		17			FILL: Gray Brown Silty fine to coarse Sand, little fine to coarse Gravel, medium dense-damp		4					
		29	4.5		OLDER ALLUVIUM: Brown fine Sandy Clay, little Silt, very stiff-very moist		14					
5		33			Brown Silty fine Sand, trace Clay, dense-moist		10					
		50			Brown Clayey fine to coarse Sand, little Silt, little Calcareous nodules, very dense-moist		8					
10												
		42	4.5		Gray Brown fine to medium Sandy Clay, trace coarse Sand, hard-very moist		16					
15												
		54			Gray Brown Clayey fine to coarse Sand, little Silt, very dense-moist		10					
20					Boring Terminated at 20'							

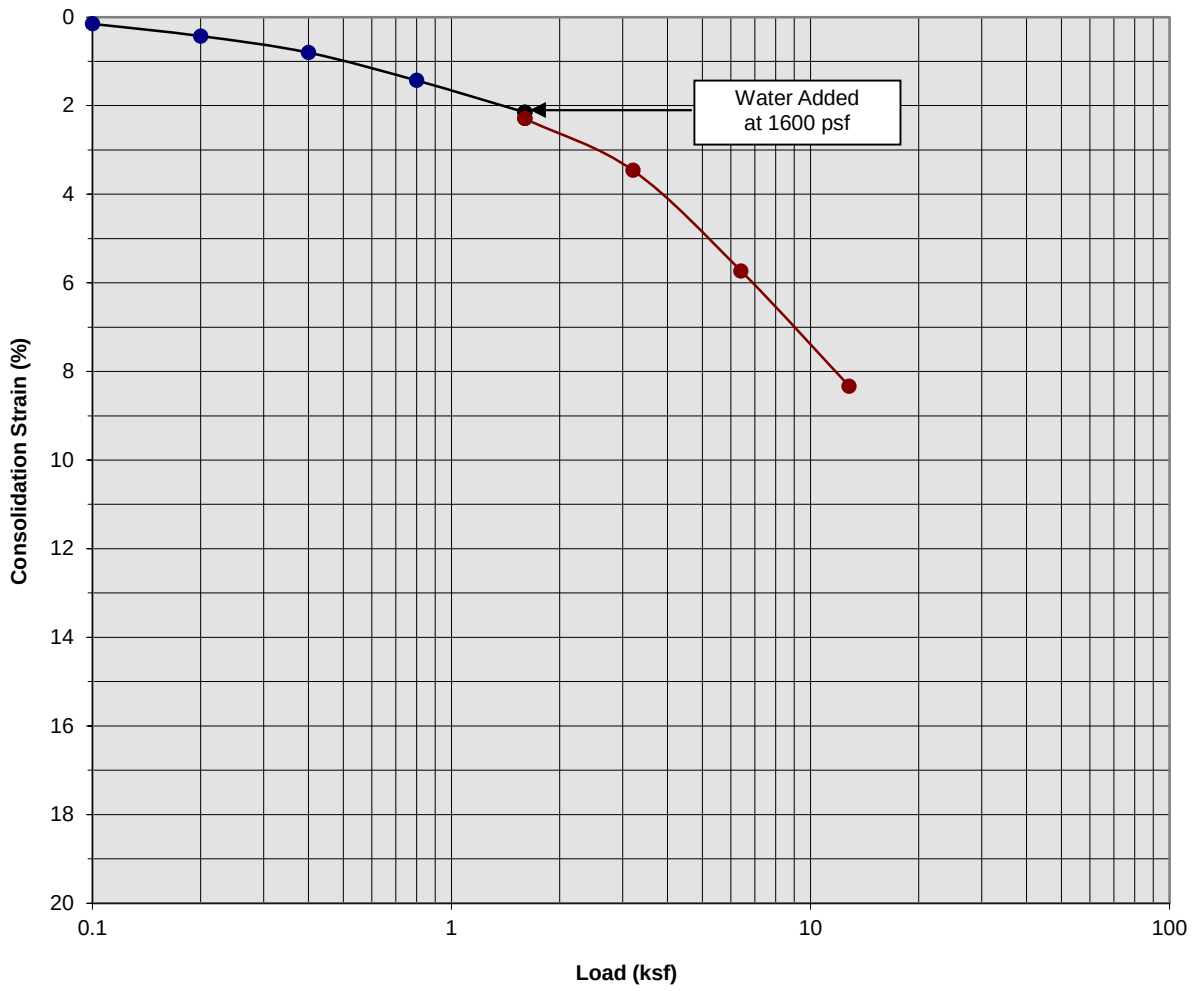
TBL 22G173-1.GPJ SOCALGEO.GDT 6/1/22

TEST BORING LOG

PLATE B-6

APPENDIX C

Consolidation/Collapse Test Results



Classification: Dark Brown fine Sandy Clay, little Silt

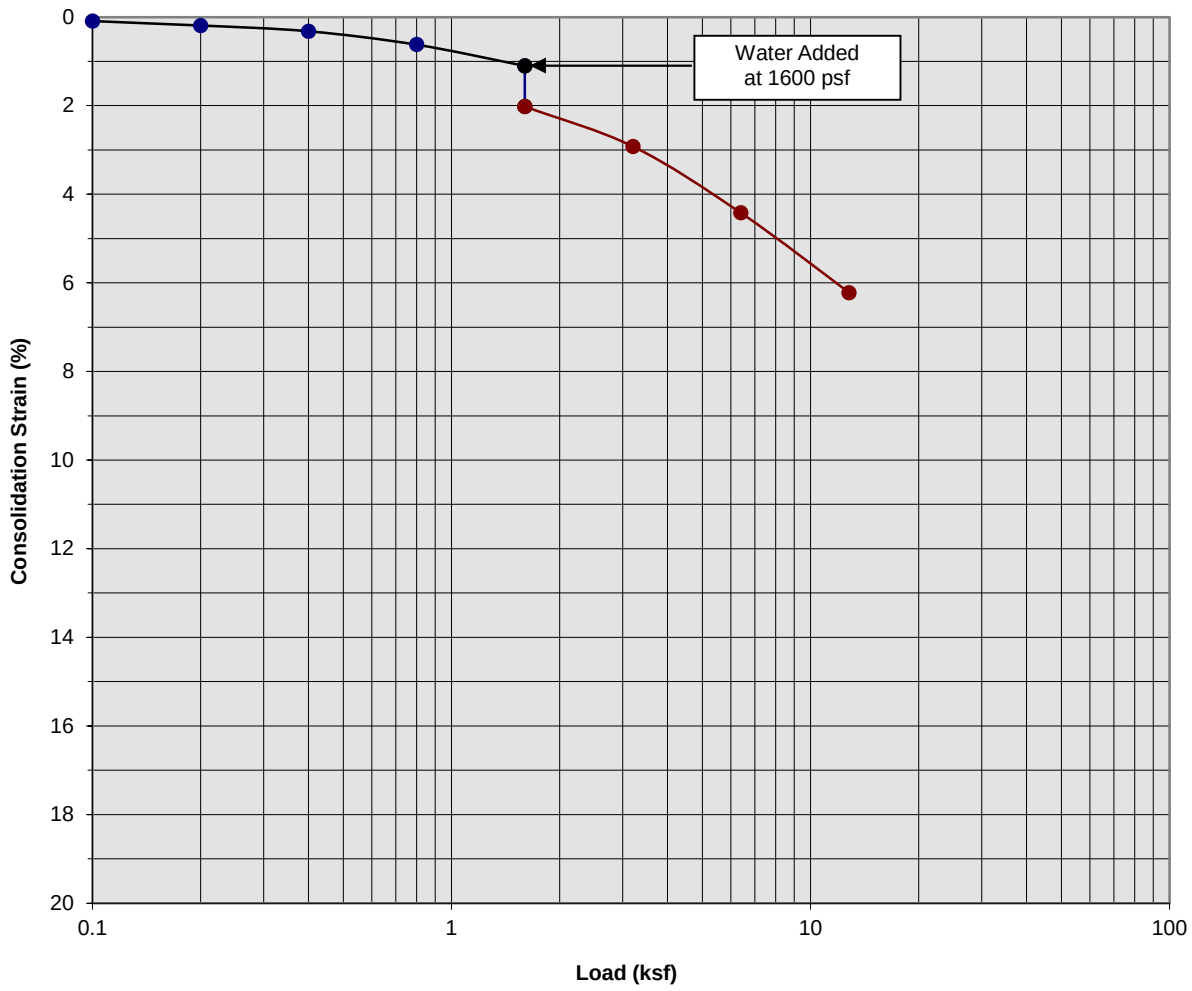
Boring Number:	B-3	Initial Moisture Content (%)	14
Sample Number:	---	Final Moisture Content (%)	16
Depth (ft)	3 to 4	Initial Dry Density (pcf)	119.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	129.5
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.14

Menifee Commerce Center - Phase III
Menifee, California
Project No. 22G173

PLATE C-1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Brown fine Sandy Silt, trace Clay, trace medium Sand

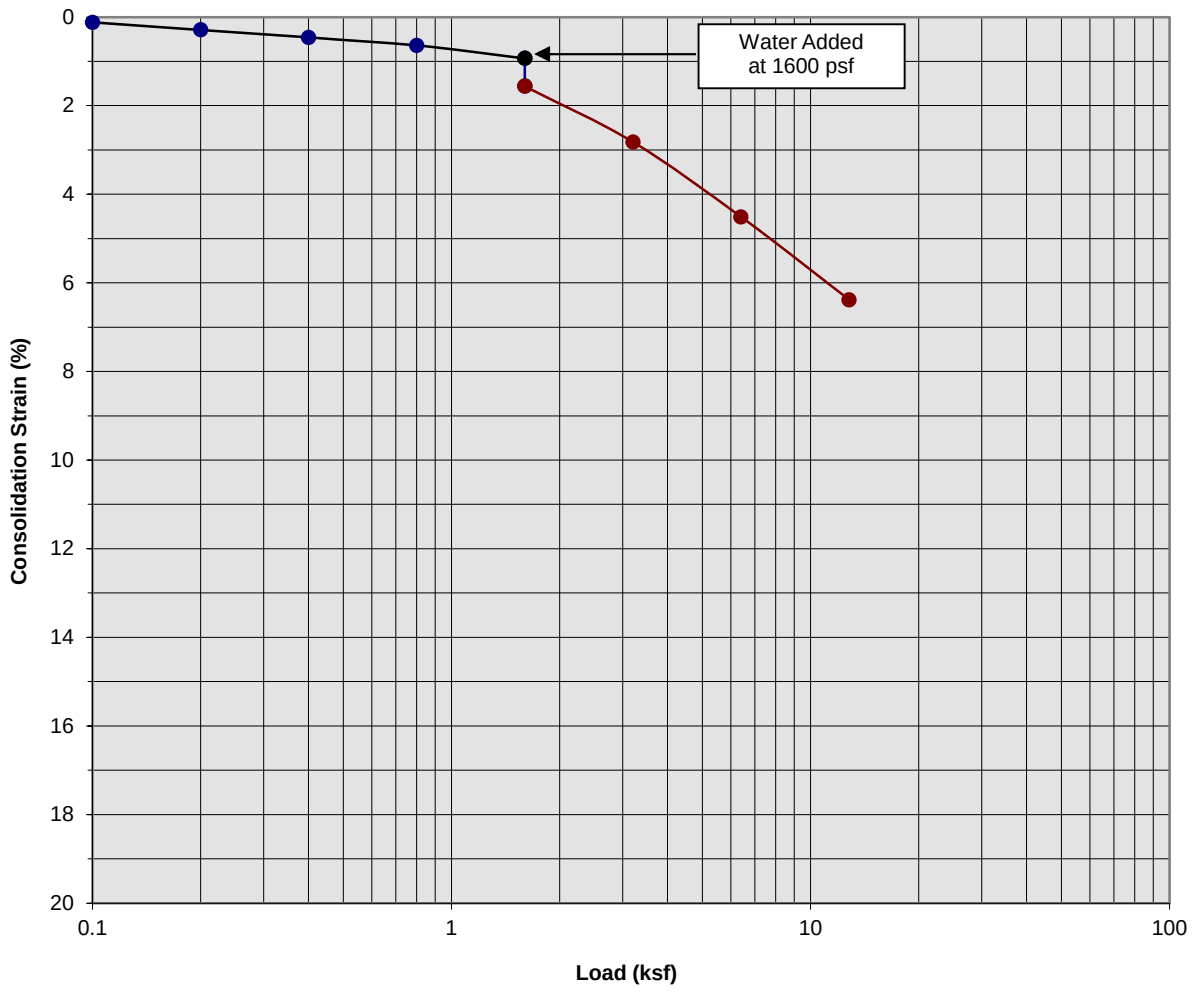
Boring Number:	B-3	Initial Moisture Content (%)	10
Sample Number:	---	Final Moisture Content (%)	17
Depth (ft)	5 to 6	Initial Dry Density (pcf)	115.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	122.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.92

Menifee Commerce Center - Phase III
Menifee, California
Project No. 22G173

PLATE C-2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Brown Clayey fine Sand, little Silt

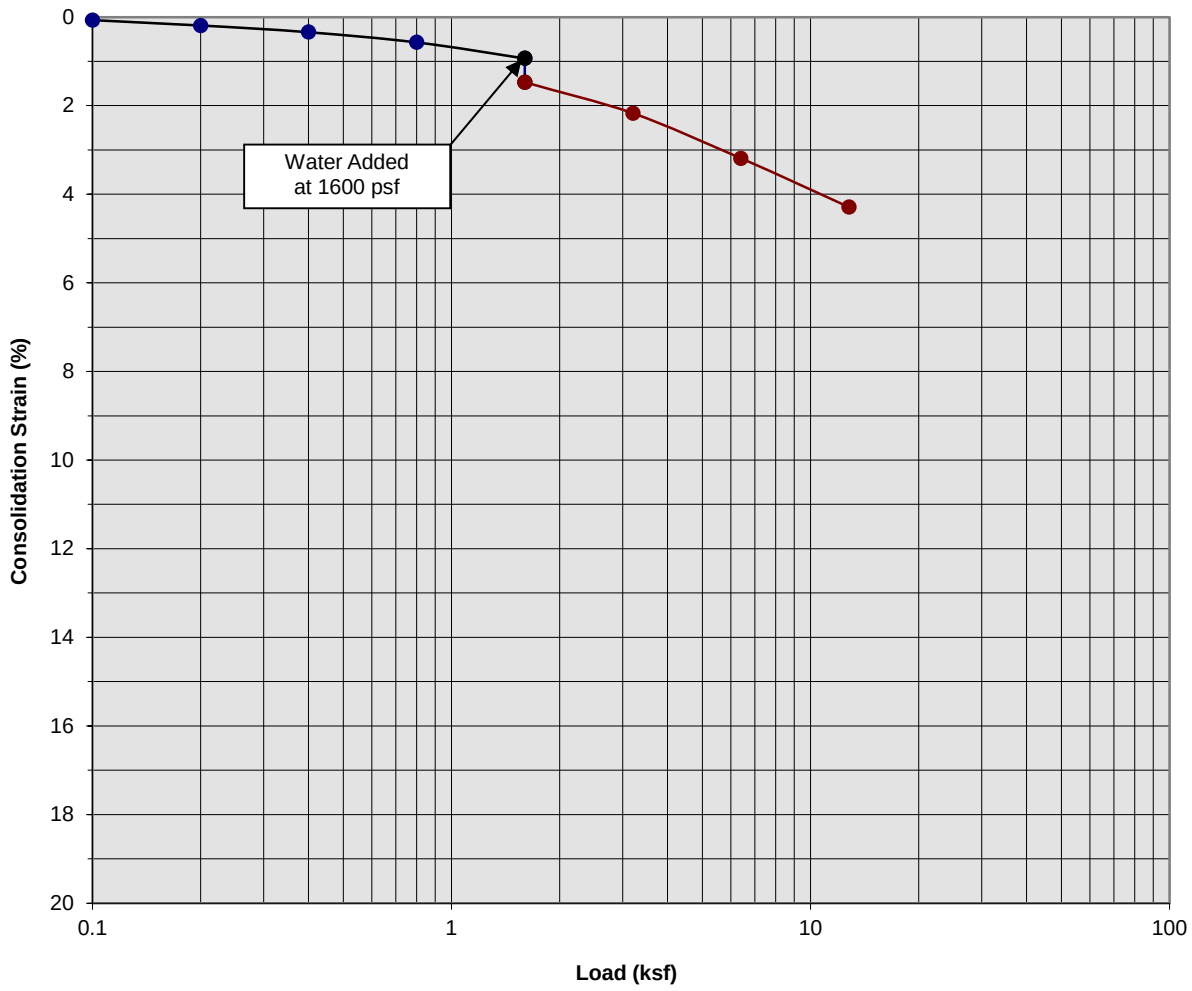
Boring Number:	B-3	Initial Moisture Content (%)	9
Sample Number:	---	Final Moisture Content (%)	13
Depth (ft)	7 to 8	Initial Dry Density (pcf)	121.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	129.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.63

Menifee Commerce Center - Phase III
Menifee, California
Project No. 22G173

PLATE C-3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Consolidation/Collapse Test Results



Classification: Light Brown fine Sandy Silt, trace Clay

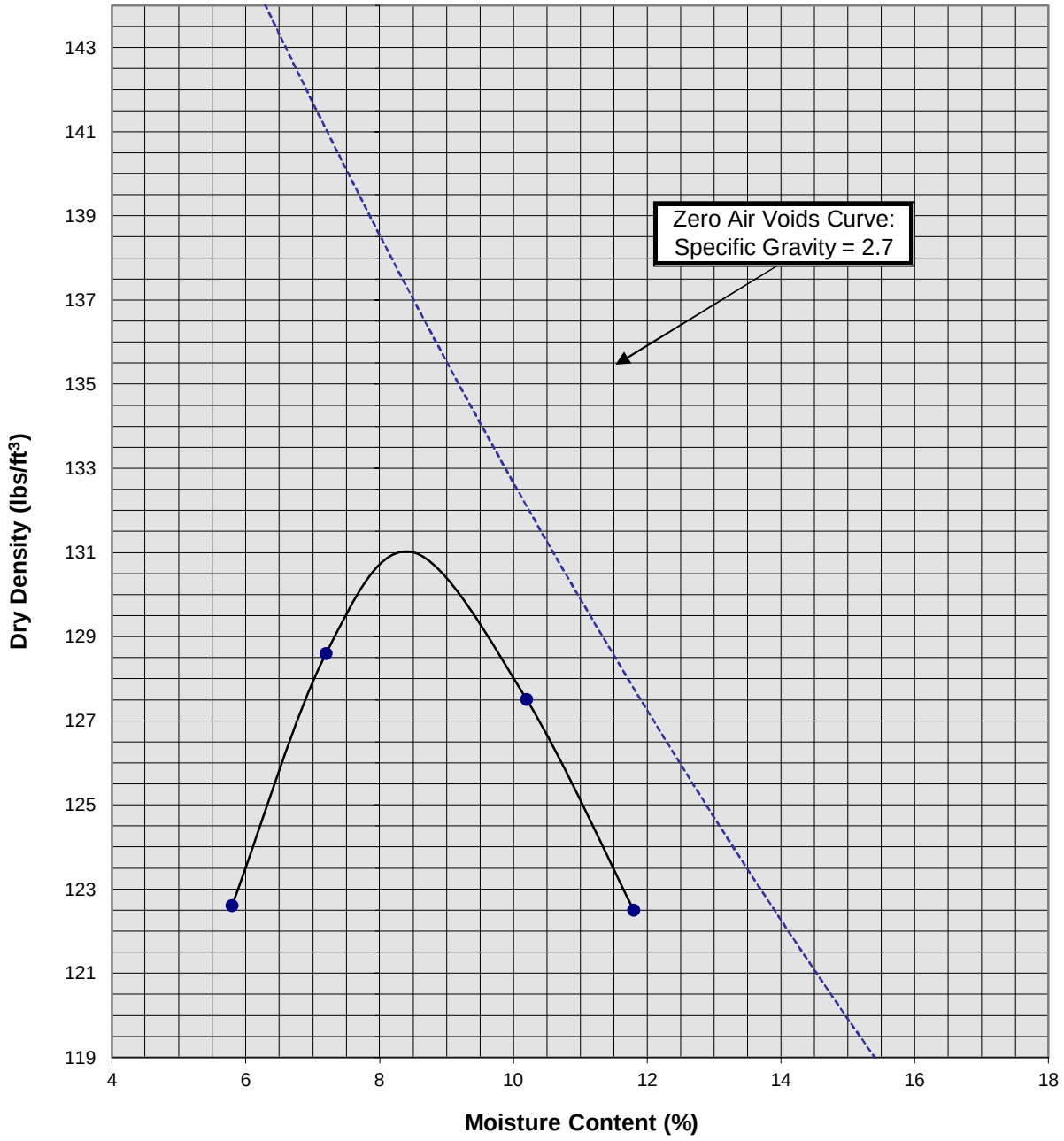
Boring Number:	B-3	Initial Moisture Content (%)	9
Sample Number:	---	Final Moisture Content (%)	15
Depth (ft)	9 to 10	Initial Dry Density (pcf)	120.0
Specimen Diameter (in)	2.4	Final Dry Density (pcf)	125.0
Specimen Thickness (in)	1.0	Percent Collapse (%)	0.54

Menifee Commerce Center - Phase III
Menifee, California
Project No. 22G173

PLATE C-4

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Moisture/Density Relationship
ASTM D-1557



Soil ID Number	B-5 @ 0 to 5'
Optimum Moisture (%)	8.5
Maximum Dry Density (pcf)	131
Soil Classification	Light Gray Brown Silty fine to coarse Sand

Menifee Commerce Center - Phase III
Menifee, CA
Project No. 22G173-1

PLATE C-5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

APPENDIX D

GRADING GUIDE SPECIFICATIONS

These grading guide specifications are intended to provide typical procedures for grading operations. They are intended to supplement the recommendations contained in the geotechnical investigation report for this project. Should the recommendations in the geotechnical investigation report conflict with the grading guide specifications, the more site specific recommendations in the geotechnical investigation report will govern.

General

- The Earthwork Contractor is responsible for the satisfactory completion of all earthwork in accordance with the plans and geotechnical reports, and in accordance with city, county, and applicable building codes.

- The Geotechnical Engineer is the representative of the Owner/Builder for the purpose of implementing the report recommendations and guidelines. These duties are not intended to relieve the Earthwork Contractor of any responsibility to perform in a workman-like manner, nor is the Geotechnical Engineer to direct the grading equipment or personnel employed by the Contractor.

- The Earthwork Contractor is required to notify the Geotechnical Engineer of the anticipated work and schedule so that testing and inspections can be provided. If necessary, work may be stopped and redone if personnel have not been scheduled in advance.

- The Earthwork Contractor is required to have suitable and sufficient equipment on the job-site to process, moisture condition, mix and compact the amount of fill being placed to the approved compaction. In addition, suitable support equipment should be available to conform with recommendations and guidelines in this report.

- Canyon cleanouts, overexcavation areas, processed ground to receive fill, key excavations, subdrains and benches should be observed by the Geotechnical Engineer prior to placement of any fill. It is the Earthwork Contractor's responsibility to notify the Geotechnical Engineer of areas that are ready for inspection.

- Excavation, filling, and subgrade preparation should be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs, and seepage water encountered shall be pumped or drained to provide a suitable working surface. The Geotechnical Engineer must be informed of springs or water seepage encountered during grading or foundation construction for possible revision to the recommended construction procedures and/or installation of subdrains.

Site Preparation

- The Earthwork Contractor is responsible for all clearing, grubbing, stripping and site preparation for the project in accordance with the recommendations of the Geotechnical Engineer.

- If any materials or areas are encountered by the Earthwork Contractor which are suspected of having toxic or environmentally sensitive contamination, the Geotechnical Engineer and Owner/Builder should be notified immediately.

- Major vegetation should be stripped and disposed of off-site. This includes trees, brush, heavy grasses and any materials considered unsuitable by the Geotechnical Engineer.

- Underground structures such as basements, cesspools or septic disposal systems, mining shafts, tunnels, wells and pipelines should be removed under the inspection of the Geotechnical Engineer and recommendations provided by the Geotechnical Engineer and/or city, county or state agencies. If such structures are known or found, the Geotechnical Engineer should be notified as soon as possible so that recommendations can be formulated.

- Any topsoil, slopewash, colluvium, alluvium and rock materials which are considered unsuitable by the Geotechnical Engineer should be removed prior to fill placement.

- Remaining voids created during site clearing caused by removal of trees, foundations basements, irrigation facilities, etc., should be excavated and filled with compacted fill.

- Subsequent to clearing and removals, areas to receive fill should be scarified to a depth of 10 to 12 inches, moisture conditioned and compacted

- The moisture condition of the processed ground should be at or slightly above the optimum moisture content as determined by the Geotechnical Engineer. Depending upon field conditions, this may require air drying or watering together with mixing and/or discing.

Compacted Fills

- Soil materials imported to or excavated on the property may be utilized in the fill, provided each material has been determined to be suitable in the opinion of the Geotechnical Engineer. Unless otherwise approved by the Geotechnical Engineer, all fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as “contaminated,” and shall be very low to non-expansive with a maximum expansion index (EI) of 50. The top 12 inches of the compacted fill should have a maximum particle size of 3 inches, and all underlying compacted fill material a maximum 6-inch particle size, except as noted below.

- All soils should be evaluated and tested by the Geotechnical Engineer. Materials with high expansion potential, low strength, poor gradation or containing organic materials may require removal from the site or selective placement and/or mixing to the satisfaction of the Geotechnical Engineer.

- Rock fragments or rocks less than 6 inches in their largest dimensions, or as otherwise determined by the Geotechnical Engineer, may be used in compacted fill, provided the distribution and placement is satisfactory in the opinion of the Geotechnical Engineer.

- Rock fragments or rocks greater than 12 inches should be taken off-site or placed in accordance with recommendations and in areas designated as suitable by the Geotechnical Engineer. These materials should be placed in accordance with Plate D-8 of these Grading Guide Specifications and in accordance with the following recommendations:

    - Rocks 12 inches or more in diameter should be placed in rows at least 15 feet apart, 15 feet from the edge of the fill, and 10 feet or more below subgrade. Spaces should be left between each rock fragment to provide for placement and compaction of soil around the fragments.

    - Fill materials consisting of soil meeting the minimum moisture content requirements and free of oversize material should be placed between and over the rows of rock or

concrete. Ample water and compactive effort should be applied to the fill materials as they are placed in order that all of the voids between each of the fragments are filled and compacted to the specified density.

- Subsequent rows of rocks should be placed such that they are not directly above a row placed in the previous lift of fill. A minimum 5-foot offset between rows is recommended.

- To facilitate future trenching, oversized material should not be placed within the range of foundation excavations, future utilities or other underground construction unless specifically approved by the soil engineer and the developer/owner representative.

- Fill materials approved by the Geotechnical Engineer should be placed in areas previously prepared to receive fill and in evenly placed, near horizontal layers at about 6 to 8 inches in loose thickness, or as otherwise determined by the Geotechnical Engineer for the project.

- Each layer should be moisture conditioned to optimum moisture content, or slightly above, as directed by the Geotechnical Engineer. After proper mixing and/or drying, to evenly distribute the moisture, the layers should be compacted to at least 90 percent of the maximum dry density in compliance with ASTM D-1557-78 unless otherwise indicated.

- Density and moisture content testing should be performed by the Geotechnical Engineer at random intervals and locations as determined by the Geotechnical Engineer. These tests are intended as an aid to the Earthwork Contractor, so he can evaluate his workmanship, equipment effectiveness and site conditions. The Earthwork Contractor is responsible for compaction as required by the Geotechnical Report(s) and governmental agencies.

- Fill areas unused for a period of time may require moisture conditioning, processing and recompaction prior to the start of additional filling. The Earthwork Contractor should notify the Geotechnical Engineer of his intent so that an evaluation can be made.

- Fill placed on ground sloping at a 5-to-1 inclination (horizontal-to-vertical) or steeper should be benched into bedrock or other suitable materials, as directed by the Geotechnical Engineer. Typical details of benching are illustrated on Plates D-2, D-4, and D-5.

- Cut/fill transition lots should have the cut portion overexcavated to a depth of at least 3 feet and rebuilt with fill (see Plate D-1), as determined by the Geotechnical Engineer.

- All cut lots should be inspected by the Geotechnical Engineer for fracturing and other bedrock conditions. If necessary, the pads should be overexcavated to a depth of 3 feet and rebuilt with a uniform, more cohesive soil type to impede moisture penetration.

- Cut portions of pad areas above buttresses or stabilizations should be overexcavated to a depth of 3 feet and rebuilt with uniform, more cohesive compacted fill to impede moisture penetration.

- Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure that excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below grade walls must be properly tested and approved by the Geotechnical Engineer with consideration of the lateral earth pressure used in the design.

Foundations

- The foundation influence zone is defined as extending one foot horizontally from the outside edge of a footing, and proceeding downward at a ½ horizontal to 1 vertical (0.5:1) inclination.

- Where overexcavation beneath a footing subgrade is necessary, it should be conducted so as to encompass the entire foundation influence zone, as described above.

- Compacted fill adjacent to exterior footings should extend at least 12 inches above foundation bearing grade. Compacted fill within the interior of structures should extend to the floor subgrade elevation.

Fill Slopes

- The placement and compaction of fill described above applies to all fill slopes. Slope compaction should be accomplished by overfilling the slope, adequately compacting the fill in even layers, including the overfilled zone and cutting the slope back to expose the compacted core

- Slope compaction may also be achieved by backrolling the slope adequately every 2 to 4 vertical feet during the filling process as well as requiring the earth moving and compaction equipment to work close to the top of the slope. Upon completion of slope construction, the slope face should be compacted with a sheepsfoot connected to a sideboom and then grid rolled. This method of slope compaction should only be used if approved by the Geotechnical Engineer.

- Sandy soils lacking in adequate cohesion may be unstable for a finished slope condition and therefore should not be placed within 15 horizontal feet of the slope face.

- All fill slopes should be keyed into bedrock or other suitable material. Fill keys should be at least 15 feet wide and inclined at 2 percent into the slope. For slopes higher than 30 feet, the fill key width should be equal to one-half the height of the slope (see Plate D-5).

- All fill keys should be cleared of loose slough material prior to geotechnical inspection and should be approved by the Geotechnical Engineer and governmental agencies prior to filling.

- The cut portion of fill over cut slopes should be made first and inspected by the Geotechnical Engineer for possible stabilization requirements. The fill portion should be adequately keyed through all surficial soils and into bedrock or suitable material. Soils should be removed from the transition zone between the cut and fill portions (see Plate D-2).

Cut Slopes

- All cut slopes should be inspected by the Geotechnical Engineer to determine the need for stabilization. The Earthwork Contractor should notify the Geotechnical Engineer when slope cutting is in progress at intervals of 10 vertical feet. Failure to notify may result in a delay in recommendations.

- Cut slopes exposing loose, cohesionless sands should be reported to the Geotechnical Engineer for possible stabilization recommendations.

- All stabilization excavations should be cleared of loose slough material prior to geotechnical inspection. Stakes should be provided by the Civil Engineer to verify the location and dimensions of the key. A typical stabilization fill detail is shown on Plate D-5.

- Stabilization key excavations should be provided with subdrains. Typical subdrain details are shown on Plates D-6.

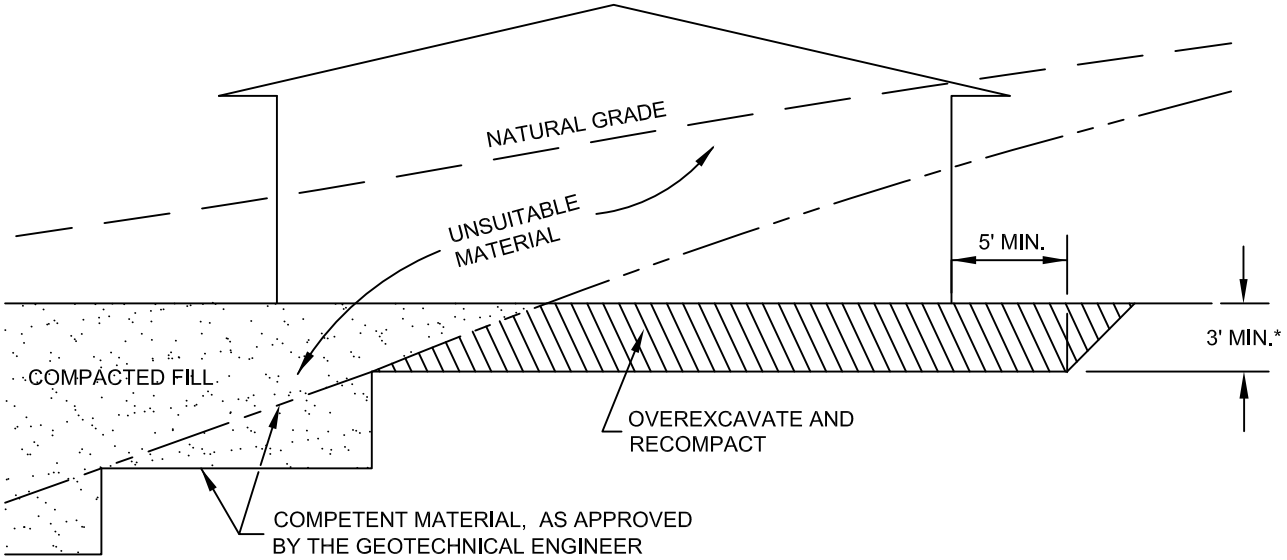
Subdrains

- Subdrains may be required in canyons and swales where fill placement is proposed. Typical subdrain details for canyons are shown on Plate D-3. Subdrains should be installed after approval of removals and before filling, as determined by the Soils Engineer.

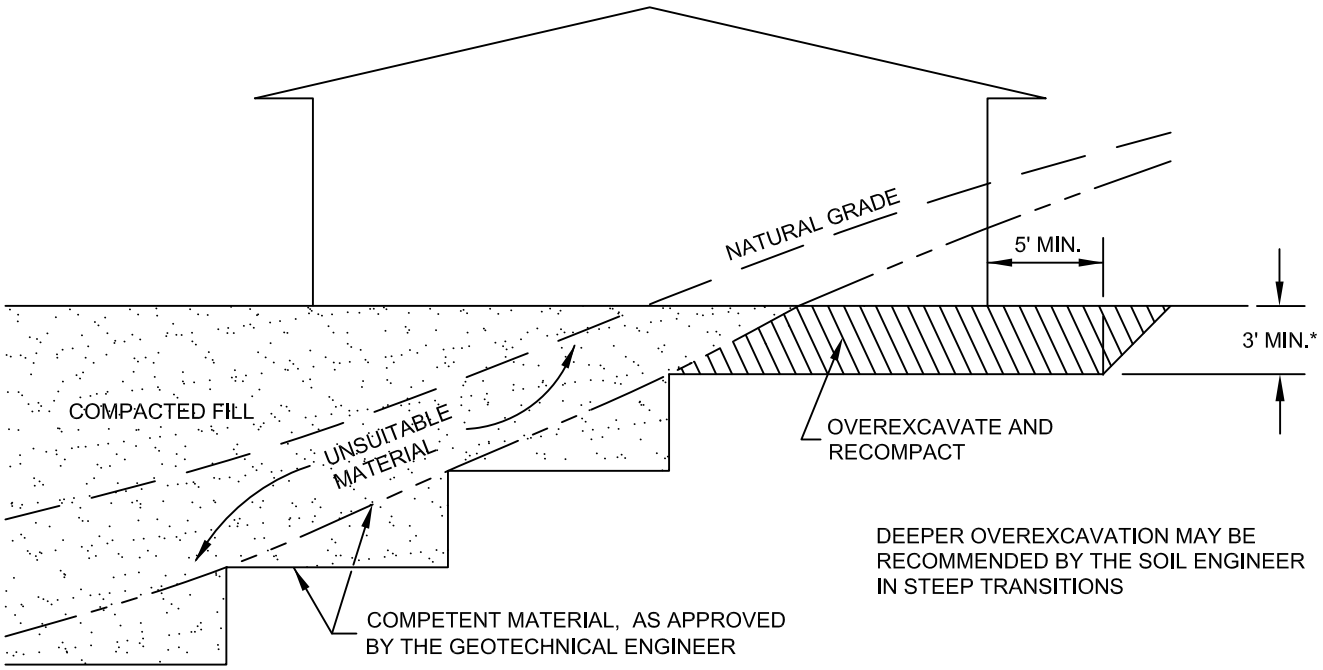
- Plastic pipe may be used for subdrains provided it is Schedule 40 or SDR 35 or equivalent. Pipe should be protected against breakage, typically by placement in a square-cut (backhoe) trench or as recommended by the manufacturer.

- Filter material for subdrains should conform to CALTRANS Specification 68-1.025 or as approved by the Geotechnical Engineer for the specific site conditions. Clean ¾-inch crushed rock may be used provided it is wrapped in an acceptable filter cloth and approved by the Geotechnical Engineer. Pipe diameters should be 6 inches for runs up to 500 feet and 8 inches for the downstream continuations of longer runs. Four-inch diameter pipe may be used in buttress and stabilization fills.

CUT LOT



CUT/FILL LOT (TRANSITION)



*SEE TEXT OF REPORT FOR SPECIFIC RECOMMENDATION. ACTUAL DEPTH OF OVEREXCAVATION MAY BE GREATER.

TRANSITION LOT DETAIL

GRADING GUIDE SPECIFICATIONS

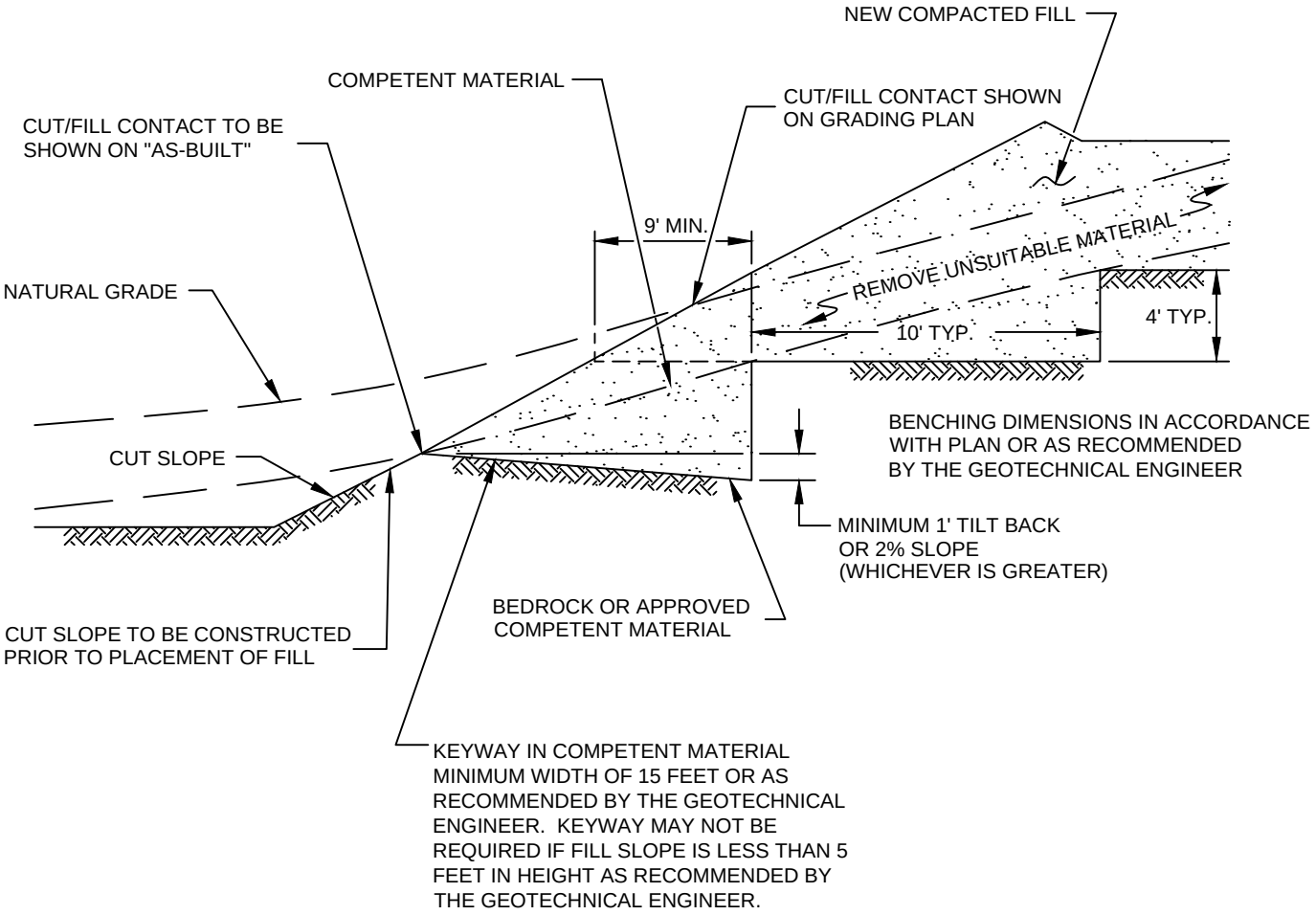
NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-1

SoCalGeo

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FILL ABOVE CUT SLOPE DETAIL

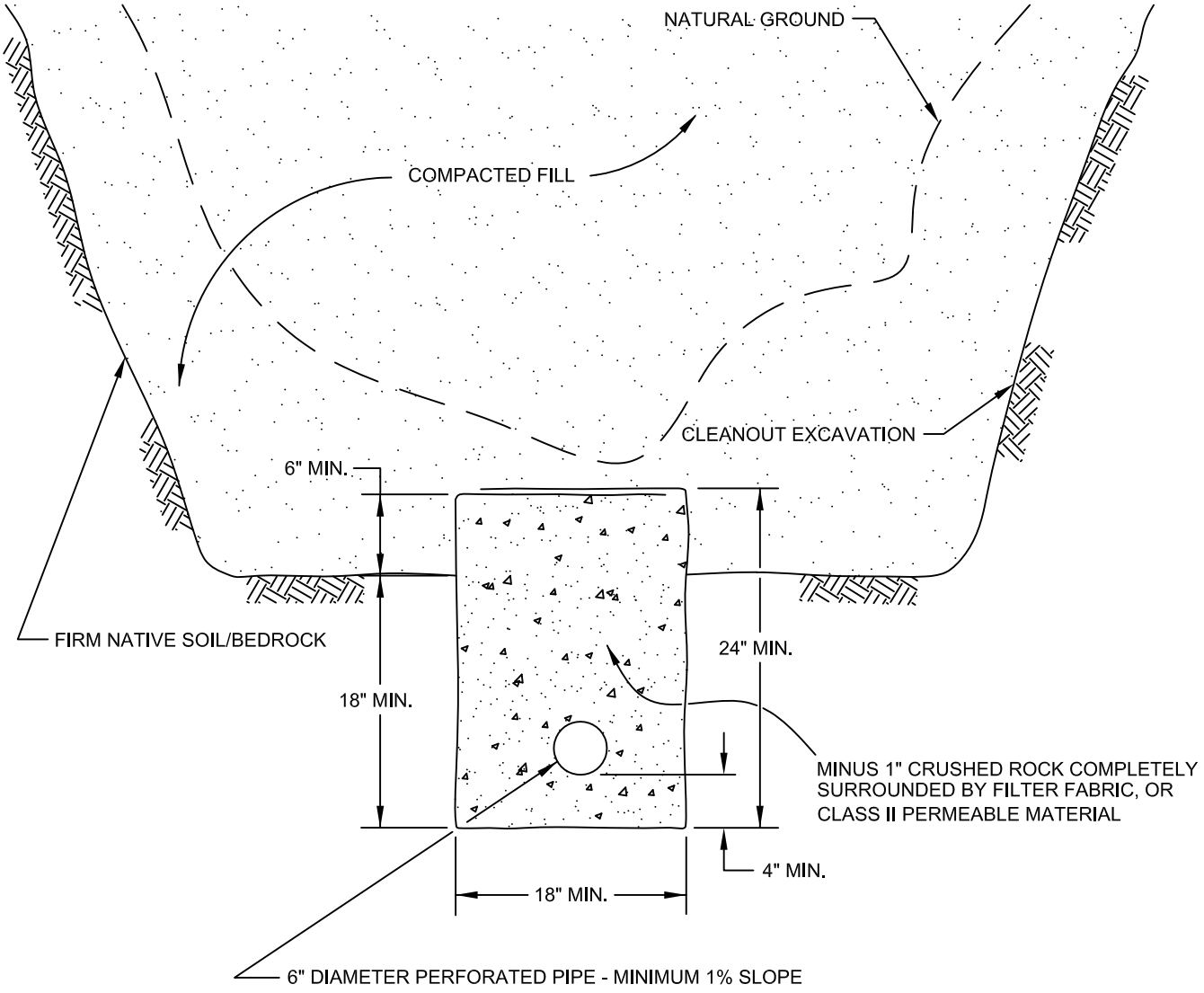
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-2

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PIPE MATERIAL	DEPTH OF FILL OVER SUBDRAIN
ADS (CORRUGATED POLETHYLENE)	8
TRANSITE UNDERDRAIN	20
PVC OR ABS: SDR 35	35
SDR 21	100

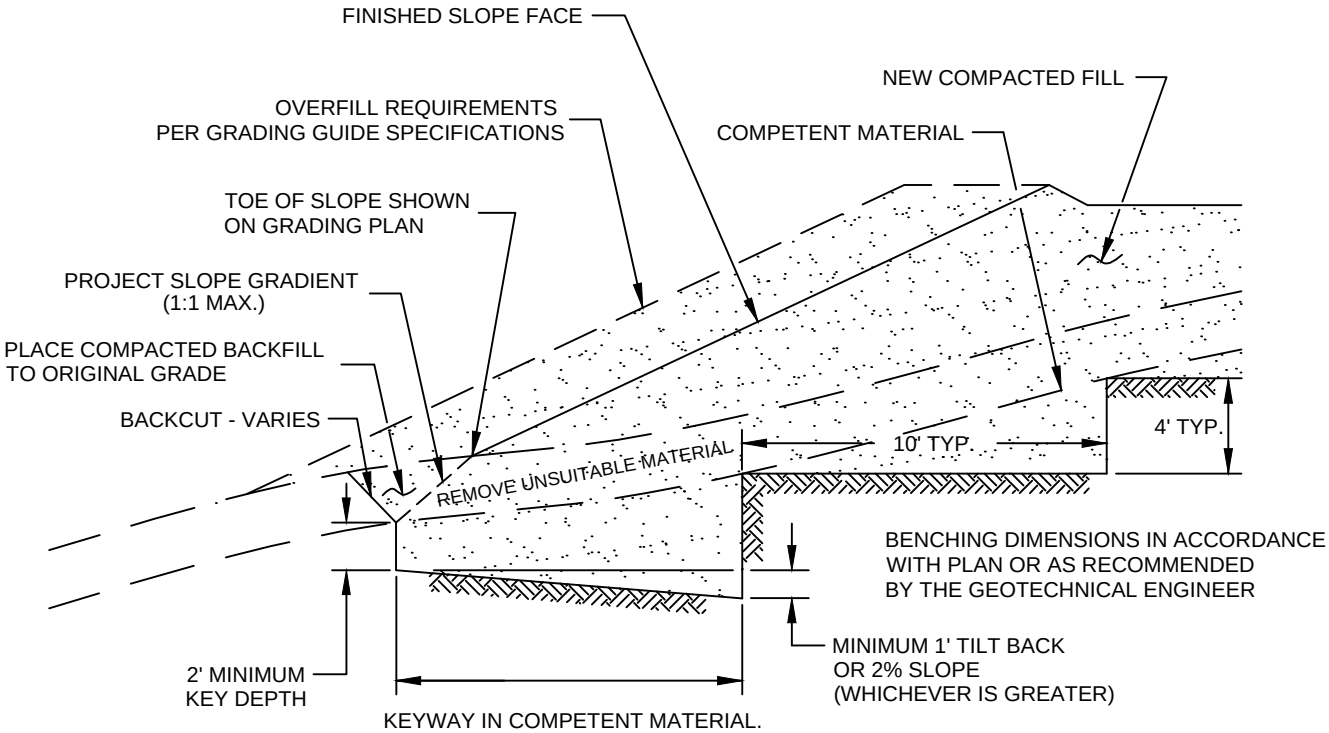
SCHEMATIC ONLY
NOT TO SCALE

CANYON SUBDRAIN DETAIL
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE
DRAWN: JAS
CHKD: GKM

PLATE D-3

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



NOTE:
BENCHING SHALL BE REQUIRED WHEN NATURAL SLOPES ARE EQUAL TO OR STEEPER THAN 5:1 OR WHEN RECOMMENDED BY THE GEOTECHNICAL ENGINEER.

FILL ABOVE NATURAL SLOPE DETAIL

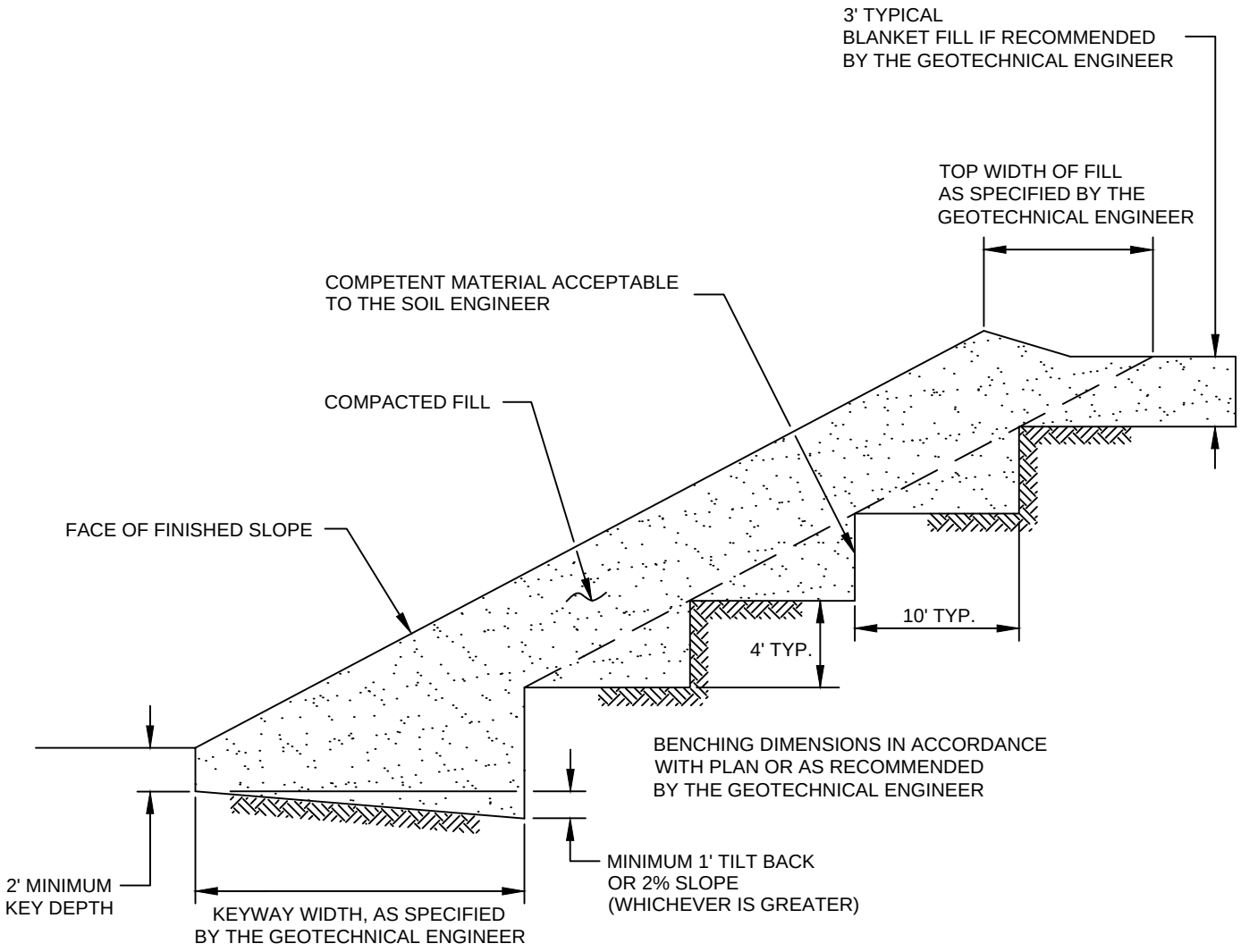
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-4

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



STABILIZATION FILL DETAIL

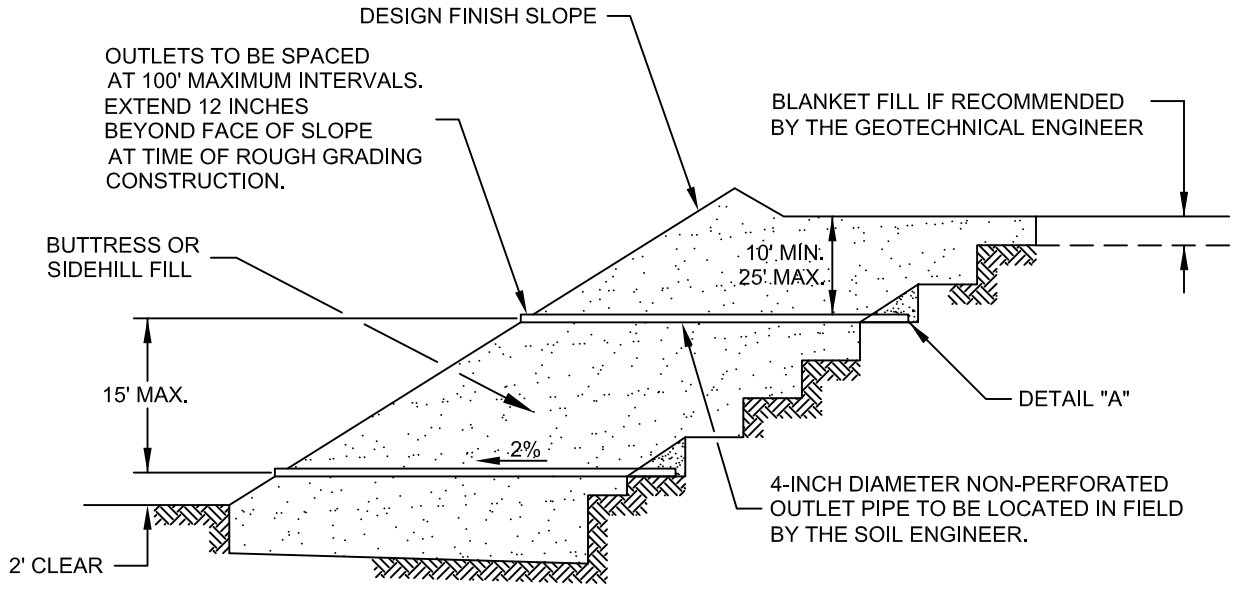
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-5

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



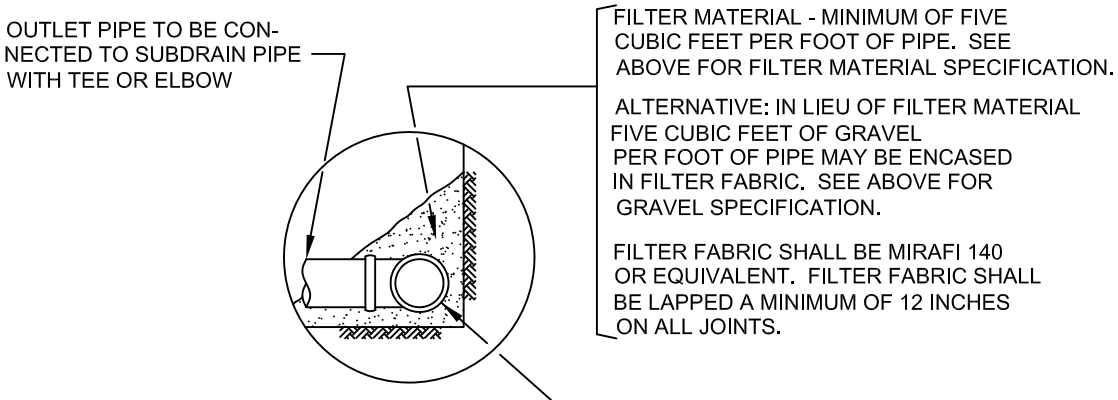
"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50



DETAIL "A"

NOTES:
1. TRENCH FOR OUTLET PIPES TO BE BACKFILLED WITH ON-SITE SOIL.

SLOPE FILL SUBDRAINS

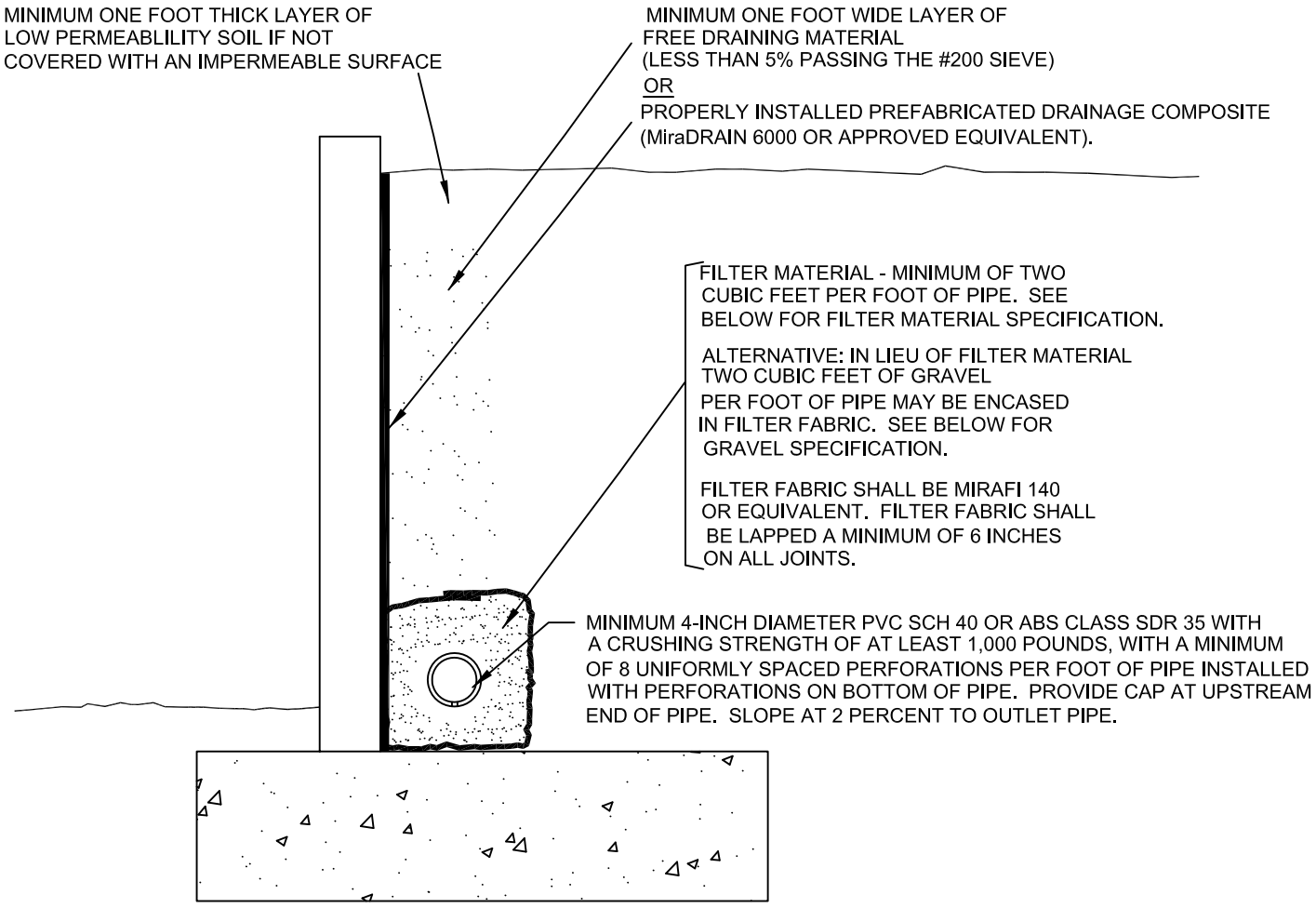
GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: JAS
CHKD: GKM

PLATE D-6

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL



"FILTER MATERIAL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT: (CONFORMS TO EMA STD. PLAN 323)

SIEVE SIZE	PERCENTAGE PASSING
1"	100
3/4"	90-100
3/8"	40-100
NO. 4	25-40
NO. 8	18-33
NO. 30	5-15
NO. 50	0-7
NO. 200	0-3

"GRAVEL" TO MEET FOLLOWING SPECIFICATION OR APPROVED EQUIVALENT:

SIEVE SIZE	MAXIMUM PERCENTAGE PASSING
1 1/2"	100
NO. 4	50
NO. 200	8

SAND EQUIVALENT = MINIMUM OF 50

RETAINING WALL BACKDRAINS

GRADING GUIDE SPECIFICATIONS

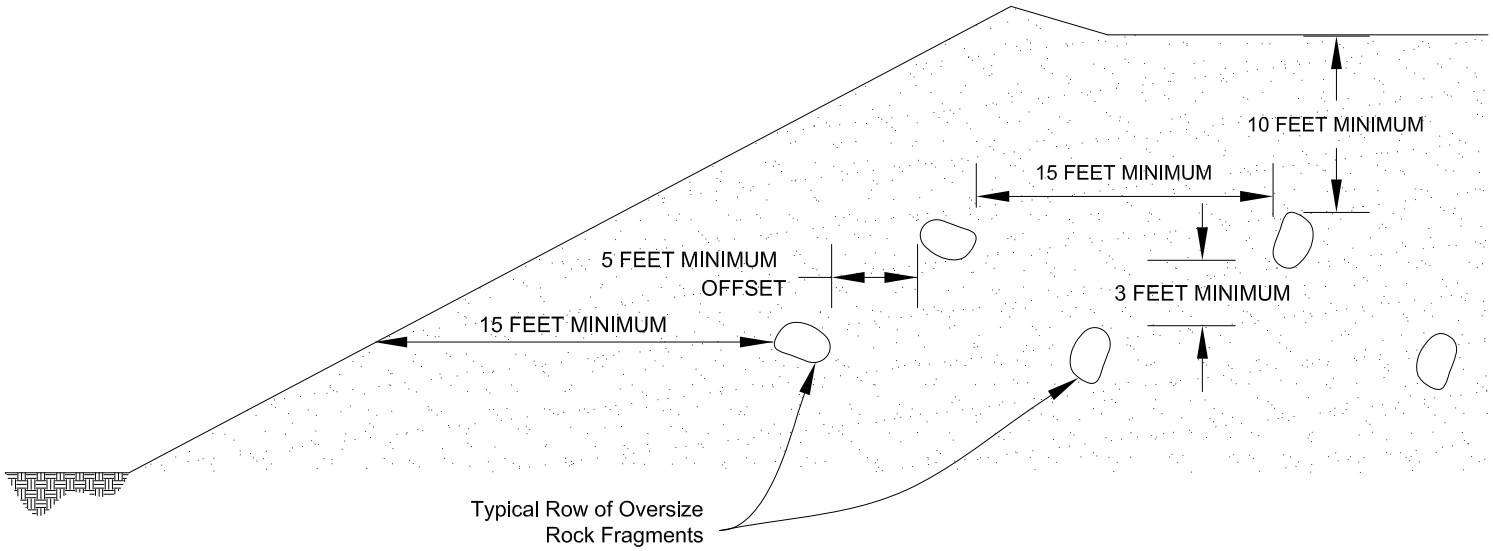
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CHKD: GKM

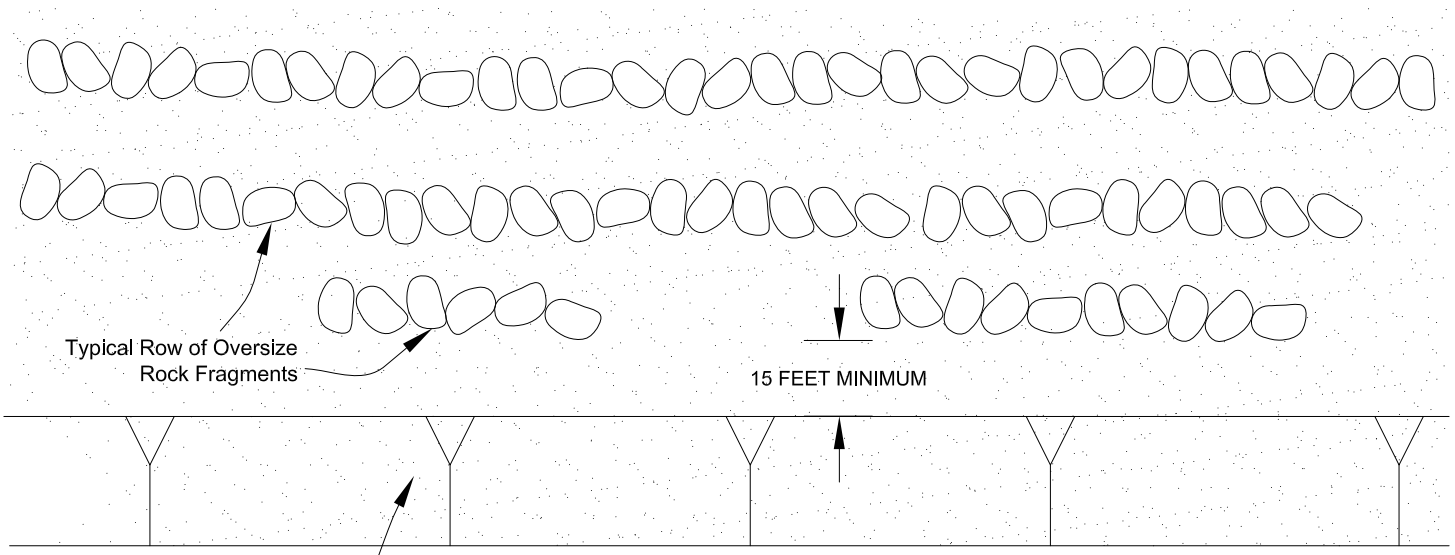
PLATE D-7

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



Section View



Plan View

PLACEMENT OF OVERSIZED MATERIAL

GRADING GUIDE SPECIFICATIONS

NOT TO SCALE

DRAWN: PM
CHKD: GKM

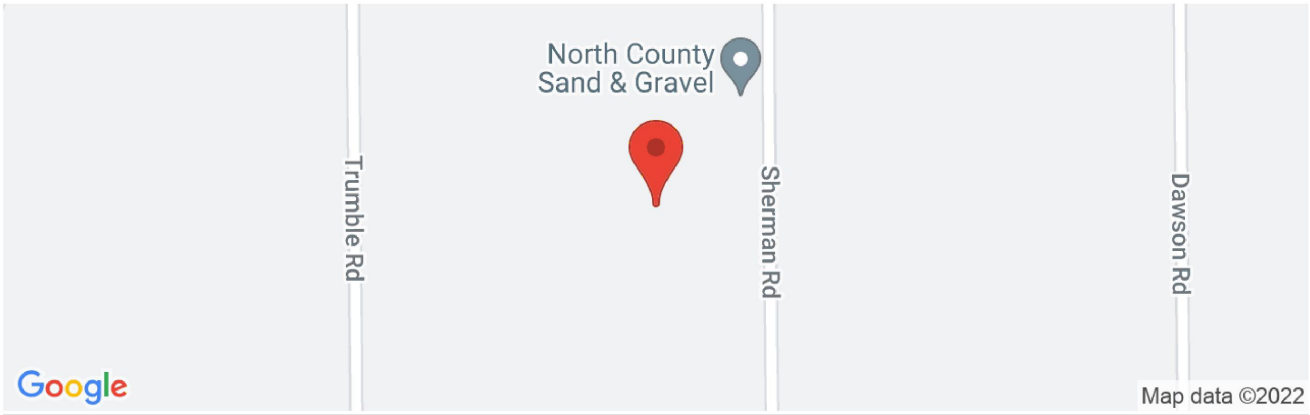
PLATE D-8

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL

APPENDIX E

Latitude, Longitude: 33.739615, -117.181617



Date	5/20/2022, 10:57:46 AM
Design Code Reference Document	ASCE7-16
Risk Category	III
Site Class	D - Stiff Soil

Type	Value	Description
S_S	1.417	MCE_R ground motion. (for 0.2 second period)
S_1	0.526	MCE_R ground motion. (for 1.0s period)
S_{MS}	1.417	Site-modified spectral acceleration value
S_{M1}	null -See Section 11.4.8	Site-modified spectral acceleration value
S_{DS}	0.945	Numeric seismic design value at 0.2 second SA
S_{D1}	null -See Section 11.4.8	Numeric seismic design value at 1.0 second SA

Type	Value	Description
SDC	null -See Section 11.4.8	Seismic design category
F_a	1	Site amplification factor at 0.2 second
F_v	null -See Section 11.4.8	Site amplification factor at 1.0 second
PGA	0.5	MCE_G peak ground acceleration
F_{PGA}	1.1	Site amplification factor at PGA
PGA_M	0.55	Site modified peak ground acceleration
T_L	8	Long-period transition period in seconds
SsRT	1.417	Probabilistic risk-targeted ground motion. (0.2 second)
SsUH	1.515	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration
SsD	1.5	Factored deterministic acceleration value. (0.2 second)
S1RT	0.526	Probabilistic risk-targeted ground motion. (1.0 second)
S1UH	0.573	Factored uniform-hazard (2% probability of exceedance in 50 years) spectral acceleration.
S1D	0.6	Factored deterministic acceleration value. (1.0 second)
PGAd	0.5	Factored deterministic acceleration value. (Peak Ground Acceleration)
C_{RS}	0.935	Mapped value of the risk coefficient at short periods
C_{R1}	0.918	Mapped value of the risk coefficient at a period of 1 s

SOURCE: SEAOC/OSHPD Seismic Design Maps Tool
<https://seismicmaps.org/>

SEISMIC DESIGN PARAMETERS - 2019 CBC
MENIFEE COMMERCE CENTER - PHASE III
MENIFEE, CALIFORNIA

DRAWN: OS
CHKD: RGT
SCG PROJECT 22G173-1
PLATE E-1

SOUTHERN CALIFORNIA GEOTECHNICAL

June 16, 2022

Core5 Industrial Partners
300 Spectrum Center Drive, Suite 880
Irvine, California 92618

Attention: Mr. Jon Kelly
Vice President Development

Project No.: **22G173-2**

Subject: **Results of Infiltration Testing**
Proposed Menifee Commerce Center – Phase III
Sherman Road, North of McLaughlin Road
Menifee, California

Reference: Geotechnical Investigation, Proposed Menifee Commerce Center – Phase III, Sherman Road, North of McLaughlin Road, Menifee, California, prepared for Core5 Industrial Partners, by Southern California Geotechnical, Inc. (SCG), SCG Project No. 22G173-1, dated June 3, 2022.

Mr. Kelly:

In accordance with your request, we have conducted infiltration testing at the subject site. We are pleased to present this report summarizing the results of the infiltration testing and our design recommendations.

Scope of Services

The scope of services performed for this project was in general accordance with our Proposal No. 22P198, dated April 19, 2022. The scope of services included site reconnaissance, subsurface exploration, field testing, and engineering analysis to determine the infiltration rates of the onsite soils. The infiltration testing was performed in general accordance with the guidelines published in Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A, prepared for the Riverside County Department of Environmental Health (RCDEH), dated December, 2013.

Site and Project Description

The subject site is located on the west side of Sherman Road, 950± feet north of McLaughlin Road in Menifee, California. The site is bounded to the north by an industrial building, to the west by single-family residences and vacant lots, to the south by a vacant lot, and to the east by Sherman Road. The general location of the site is illustrated on the Site Location Map, enclosed as Plate 1 A of this report.

The subject site consists of a rectangular-shaped parcel, which totals 11.3± acres in size. The site is developed with an aggregate (sand and gravel) supply company, which includes an office building, 1,200± ft² in size, located in the northeastern corner of the site. The building is a single-story structure of wood-frame construction, presumably supported on conventional shallow

foundations, with a concrete slab-on-grade floor. Several soil and/or aggregate stockpiles are located in the south and southwest regions of the site. A concrete loading dock, approximately 4 feet in height, is located in the west-central region of the site. Masonry block wall enclosures are located along the northwestern boundary of the site. Ground surface cover throughout the site generally consists of crushed aggregate base (CAB).

Detailed topographic information was not available at the time of this report. Based on elevations obtained from Google Earth and visual observations made at the time of the subsurface investigation, the overall site slopes downward to the west at a gradient of less than 1± percent.

Proposed Development

Based on the conceptual site plan provided to our office by the client, the site will be developed with one (1) industrial building. The new building will be located in the west-central area of the site and will be 261,420± ft² in size. The building will be constructed with dock-high doors along a portion of the east building wall. The building will be surrounded by asphaltic concrete (AC) pavements in the parking and drive lanes, Portland cement concrete (PCC) pavements in the loading dock areas, and concrete flatwork with limited areas of landscape planters throughout.

The proposed development will include on-site storm water infiltration. The infiltration system will consist of a below-grade chamber system located in the eastern area of the site. The bottom of the infiltration system is expected be 12± feet below the existing site grades.

Concurrent Study

Artificial fill soils were encountered at the ground surface at Boring Nos. B-2, B-3, B-5 and B-6, extending to depths of 2½ to 3± feet below ground surface. The fill soils generally consist of medium dense to dense clayey fine sand and silty fine sands with varying medium to coarse sand and gravel content, and stiff clayey silts. Older alluvium was encountered beneath the artificial fill soils or at the ground surface at all of the boring locations, extending to at least the maximum depth explored of 25± feet below ground surface. The alluvial soils generally consist of medium dense to very dense silty fine to coarse sands, clayey fine to medium sands and fine sandy silts, and very stiff to hard fine sandy clays, silty clays and clayey silts with varying fine to coarse sand content.

Groundwater

Free water was not encountered during the drilling of any of the borings. Based on the lack of any water within the borings, and the moisture contents of the recovered soil samples, the static groundwater table is considered to have existed at a depth in excess of 25± feet at the time of the subsurface exploration.

Recent water level data was obtained from the California Department of Water Resources website, http://www.water.ca.gov/waterdatalibrary/. One monitoring well on record is located 600± feet northwest of the site. Water level readings within this monitoring well indicates a high groundwater level of 66± feet below ground surface in March 2022.

Subsurface Exploration

Scope of Exploration

The subsurface exploration conducted for the infiltration testing consisted of two (2) infiltration test borings, advanced to a depth of 12± feet below the existing site grades. The infiltration borings were advanced using a truck-mounted drilling rig, equipped with 8-inch-diameter hollow stem augers and were logged during drilling by a member of our staff. The approximate locations of the infiltration test borings (identified as I-1 and I-2) are indicated on the Infiltration Test Location Plan, enclosed as Plate 2 of this report.

Upon the completion of the infiltration borings, the bottom of each test boring was covered with 2± inches of clean ¾-inch gravel. A sufficient length of 3-inch-diameter perforated PVC casing was then placed into each test hole so that the PVC casing extended from the bottom of the test hole to the ground surface. Clean ¾-inch gravel was then installed in the annulus surrounding the PVC casing.

Geotechnical Conditions

Artificial fill soils were encountered at the ground surface at both of the infiltration test locations, extending to a depth of 3± feet below the existing site grades. The fill soils generally consist of very stiff silty clays and medium dense silty fine to coarse sands with varying gravel content. These materials possess a slightly disturbed appearance, resulting in their classification as artificial fill. Native older alluvium was encountered beneath the fill soils at both of the infiltration test boring locations, extending to at least the maximum explored depth of 12± feet below existing site grades. The older alluvium generally consists of dense to very dense clay sands and silty sands, and occasional hard sandy clay strata. The Boring Logs, which illustrate the conditions encountered at the boring locations, are included with this report.

Infiltration Testing

As previously mentioned, the infiltration testing was performed in general accordance with the Riverside County guidelines: Riverside County – Low Impact Development BMP Design Handbook – Section 2.3 of Appendix A.

Pre-soaking

In accordance with the county infiltration standards all of the infiltration test borings were pre-soaked prior to the infiltration testing. The pre-soaking process consisted of filling the test borings by inverting a full 5-gallon bottle of clear water supported over each hole so that the water level reaches a level of at least 5 times the hole's radius above the gravel at the bottom of each hole. The pre-soaking was completed after all of the water had percolated through each test hole or after 15 hours since initiating the pre-soak.

Infiltration Testing

Following the pre-soaking process of the infiltration test borings, SCG performed the infiltration testing. Each test hole was filled with water to a depth of at least 5 times the hole's radius above the gravel at the bottom of each test hole. In accordance with the Riverside County guidelines,

since "non-sandy soils" were encountered at the bottom of the infiltration test borings (where 6 inches of water did not infiltrate into the surrounding soils in less than 25 minutes for two (2) consecutive readings), readings were taken at 30-minute intervals for a total of 6 hours at the test location. The water level readings are presented on the spreadsheets enclosed with this report. The infiltration rates for each of the timed intervals are also tabulated on the spreadsheets.

The infiltration rates for the infiltration tests are calculated in centimeters per hour and then converted to inches per hour. The rates are summarized below:

Infiltration Test No.	Depth (feet)	Soil Description	Infiltration Rate (inches/hour)
I-1	12	Clayey fine to coarse Sand, little Silt	0.01
I-2	12	Silty fine to medium Sand, trace coarse Sand, little Clay	0.03

Design Recommendations

Two (2) infiltration tests were performed at the subject site. As noted above, the calculated infiltration rates at the infiltration test locations range from 0.01 to 0.03 inches per hour. The major factors affecting the lack of infiltration at these locations are the varying relative densities and the moderate silt/clay content. **Based on the lack of infiltration at the depths tested, infiltration is not considered feasible for this site.**

Although infiltration is not considered feasible at the site, the client may desire to use storm water disposal systems that do not rely on infiltration at this site. The design of the storm water infiltration system should be performed by the project civil engineer, in accordance with the City of Menifee and/or County of Riverside guidelines. It is recommended that the system be constructed so as to facilitate removal of silt and clay, or other deleterious materials from any water that may enter the systems. The presence of such materials would decrease the effective infiltration rates. **It is recommended that the project civil engineer apply an appropriate factor of safety. The infiltration rates recommended above is based on the assumption that only clean water will be introduced to the subsurface profile. Any fines, debris, or organic materials could significantly impact the infiltration rate.** It should be noted that the recommended infiltration rates are based on infiltration testing at two (2) discrete locations and that the overall infiltration rates of the proposed infiltration systems could vary considerably.

Infiltration Rate Considerations

The infiltration rates presented herein was determined in accordance with the Riverside County guidelines and are considered valid only for the time and place of the actual test. Varying subsurface conditions will exist in other areas of the site, which could alter the recommended infiltration rates presented above. The infiltration rates will decline over time between maintenance cycles as silt or clay particles accumulate on the BMP surface. The infiltration rate is highly dependent upon a number of factors, including density, silt and clay content, grainsize distribution throughout the range of particle sizes, and particle shape. Small changes in these factors can cause large changes in the infiltration rates.

Infiltration rates are based on unsaturated flow. As water is introduced into soils by infiltration, the soils become saturated and the wetting front advances from the unsaturated zone to the saturated zone. Once the soils become saturated, infiltration rates become zero, and water can only move through soils by hydraulic conductivity at a rate determined by pressure head and soil permeability. Changes in soil moisture content will affect the infiltration rate. Infiltration rates should be expected to decrease until the soils become saturated. Soil permeability values will then govern groundwater movement. Permeability values may be on the order of 10 to 20 times less than infiltration rates. The system designer should incorporate adequate factors of safety and allow for overflow design into appropriate traditional storm drain systems, which would transport storm water off-site.

Location of Infiltration Systems

The use of on-site storm water infiltration systems carries a risk of creating adverse geotechnical conditions. Increasing the moisture content of the soil can cause the soil to lose internal shear strength and increase its compressibility, resulting in a change in the designed engineering properties. Overlying structures and pavements in the infiltration area could potentially be damaged due to saturation of the subgrade soils. **The proposed infiltration systems for this site should be located at least 25 feet away from any structures, including retaining walls.** Even with this provision of locating the infiltration system at least 25 feet from the building(s), it is possible that infiltrating water into the subsurface soils could have an adverse effect on the proposed or existing structures. It should also be noted that utility trenches which happen to collect storm water can also serve as conduits to transmit storm water toward the structure, depending on the slope of the utility trench. Therefore, consideration should also be given to the proposed locations of underground utilities which may pass near the proposed infiltration system.

The infiltration system designer should also give special consideration to the effect that the proposed infiltration systems may have on nearby subterranean structures, open excavations, or descending slopes. In particular, infiltration systems should not be located near the crest of descending slopes, particularly where the slopes are comprised of granular soils. Such systems will require specialized design and analysis to evaluate the potential for slope instability, piping failures and other phenomena that typically apply to earthen dam design. This type of analysis is beyond the scope of this infiltration test report, but these factors should be considered by the infiltration system designer when locating the infiltration systems.

Closure

We sincerely appreciate the opportunity to be of service on this project. We look forward to providing additional consulting services during the course of the project. If we may be of further assistance in any manner, please contact our office.

Respectfully Submitted,

SOUTHERN CALIFORNIA GEOTECHNICAL, INC.

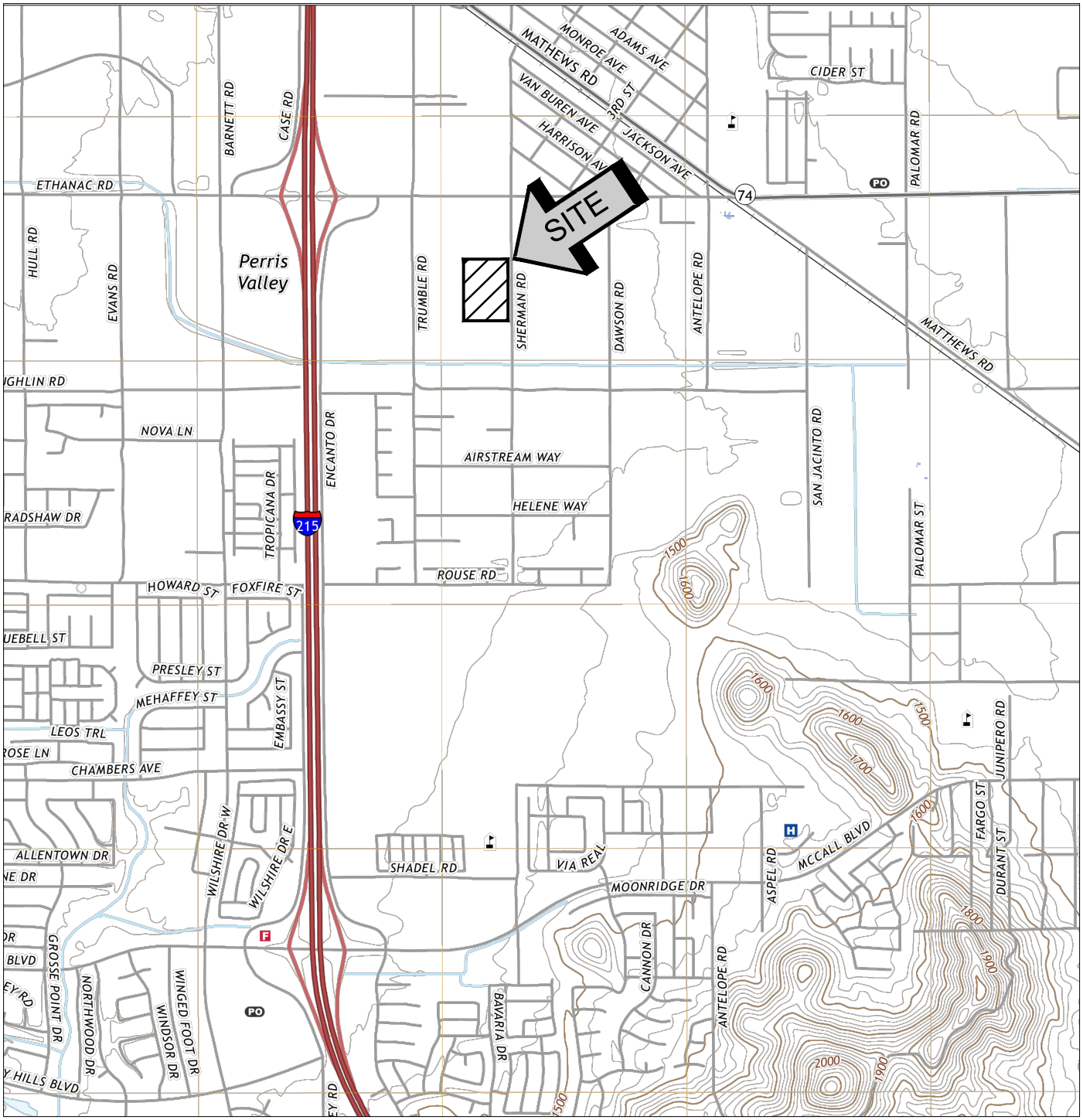
Pablo Montes Jr.
Project Engineer



Robert G. Trazo, GE 2655
Principal Engineer

Distribution: (1) Addressee

Enclosures: Plate 1 - Site Location Map
Plate 2 - Infiltration Test Location Plan
Boring Log Legend and Logs (4 pages)
Infiltration Test Results Spreadsheets (2 pages)
Grainsize Distribution Graphs (2 pages)



SOURCE: USGS TOPOGRAPHIC MAP OF THE ROMOLAND QUADRANGLE, RIVERSIDE COUNTY, CALIFORNIA, 2022

SITE LOCATION MAP

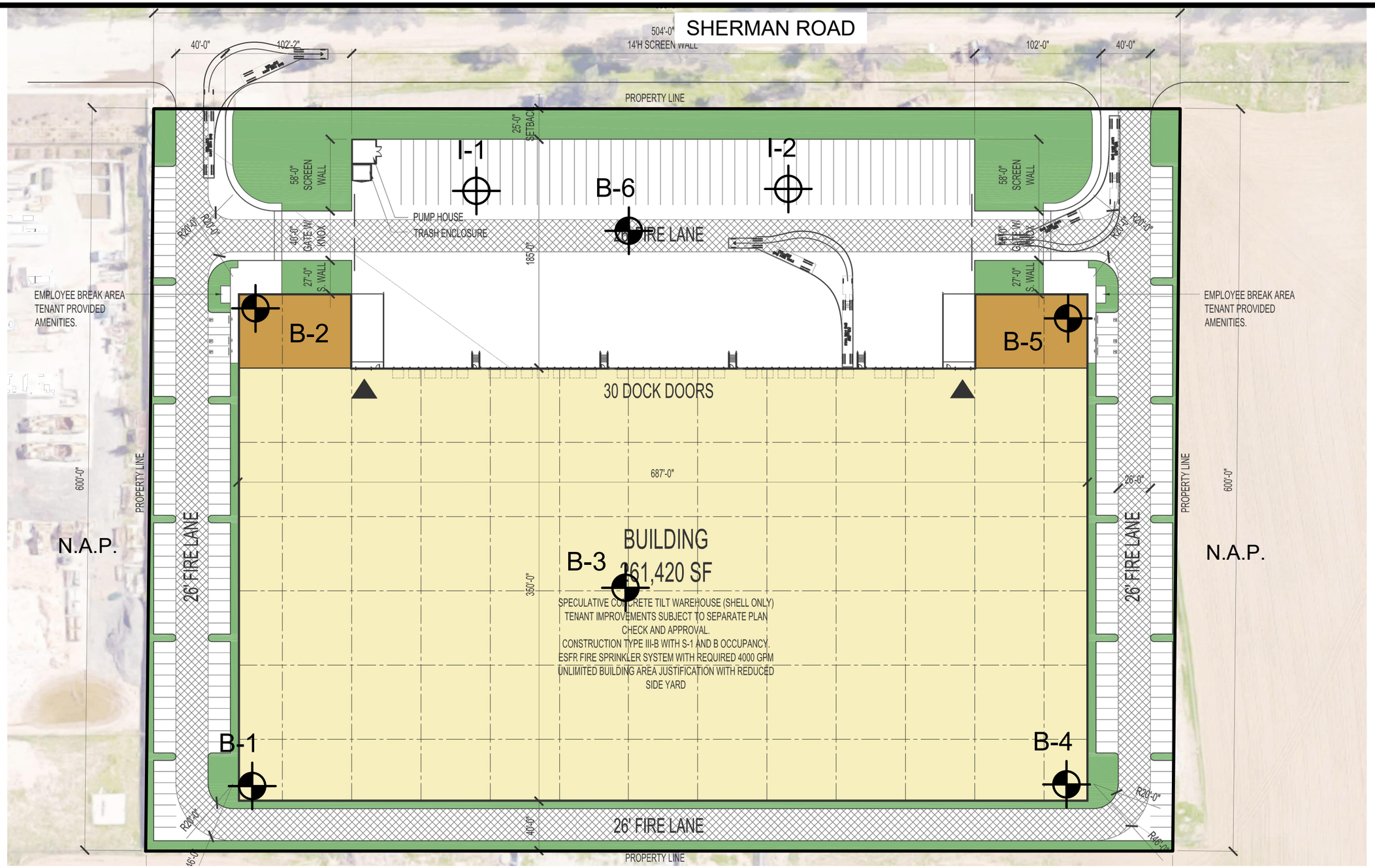
MENIFEE COMMERCE CENTER - PHASE III

MENIFEE, CALIFORNIA

SCALE: 1" = 2000'	
DRAWN: OS CHKD: RGT	
SCG PROJECT 22G173-2	
PLATE 1	

SoCalGeo

SOUTHERN CALIFORNIA GEOTECHNICAL



GEOTECHNICAL LEGEND

- APPROXIMATE INFILTRATION TEST LOCATION
- APPROXIMATE BORING LOCATION (SCG PROJECT NO. 22G173-1)

NORTH

SoCalGeo

NOTE: SITE PLAN PROVIDED BY THE CLIENT

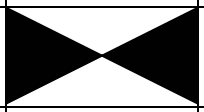
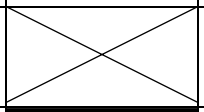
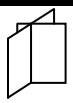
INFILTRATION TEST LOCATION PLAN

MENIFEE COMMERCE CENTER - PHASE III

MENIFEE, CALIFORNIA

SCALE: 1" = 80'	SoCalGeo SOUTHERN CALIFORNIA GEOTECHNICAL
DRAWN: OS CHKD: RGT	
SCG PROJECT 22G173-2	
PLATE 2	

BORING LOG LEGEND

SAMPLE TYPE	GRAPHICAL SYMBOL	SAMPLE DESCRIPTION
AUGER		SAMPLE COLLECTED FROM AUGER CUTTINGS, NO FIELD MEASUREMENT OF SOIL STRENGTH. (DISTURBED)
CORE		ROCK CORE SAMPLE: TYPICALLY TAKEN WITH A DIAMOND-TIPPED CORE BARREL. TYPICALLY USED ONLY IN HIGHLY CONSOLIDATED BEDROCK.
GRAB		SOIL SAMPLE TAKEN WITH NO SPECIALIZED EQUIPMENT, SUCH AS FROM A STOCKPILE OR THE GROUND SURFACE. (DISTURBED)
CS		CALIFORNIA SAMPLER: 2-1/2 INCH I.D. SPLIT BARREL SAMPLER, LINED WITH 1-INCH HIGH BRASS RINGS. DRIVEN WITH SPT HAMMER. (RELATIVELY UNDISTURBED)
NSR		NO RECOVERY: THE SAMPLING ATTEMPT DID NOT RESULT IN RECOVERY OF ANY SIGNIFICANT SOIL OR ROCK MATERIAL.
SPT		STANDARD PENETRATION TEST: SAMPLER IS A 1.4 INCH INSIDE DIAMETER SPLIT BARREL, DRIVEN 18 INCHES WITH THE SPT HAMMER. (DISTURBED)
SH		SHELBY TUBE: TAKEN WITH A THIN WALL SAMPLE TUBE, PUSHED INTO THE SOIL AND THEN EXTRACTED. (UNDISTURBED)
VANE		VANE SHEAR TEST: SOIL STRENGTH OBTAINED USING A 4 BLADED SHEAR DEVICE. TYPICALLY USED IN SOFT CLAYS-NO SAMPLE RECOVERED.

COLUMN DESCRIPTIONS

DEPTH: Distance in feet below the ground surface.

SAMPLE: Sample Type as depicted above.

BLOW COUNT: Number of blows required to advance the sampler 12 inches using a 140 lb hammer with a 30-inch drop. 50/3" indicates penetration refusal (>50 blows) at 3 inches. WH indicates that the weight of the hammer was sufficient to push the sampler 6 inches or more.

POCKET PEN.: Approximate shear strength of a cohesive soil sample as measured by pocket penetrometer.

GRAPHIC LOG: Graphic Soil Symbol as depicted on the following page.

DRY DENSITY: Dry density of an undisturbed or relatively undisturbed sample in lbs/ft^3.

MOISTURE CONTENT: Moisture content of a soil sample, expressed as a percentage of the dry weight.

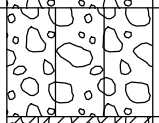
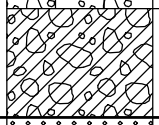
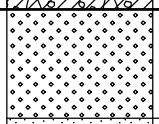
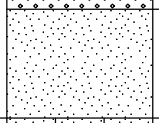
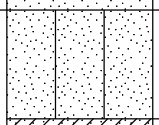
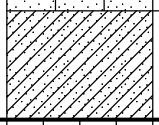
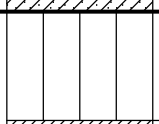
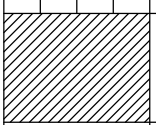
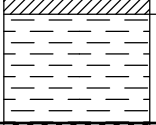
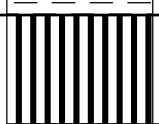
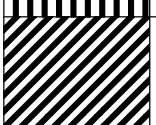
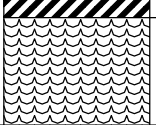
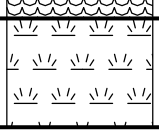
LIQUID LIMIT: The moisture content above which a soil behaves as a liquid.

PLASTIC LIMIT: The moisture content above which a soil behaves as a plastic.

PASSING #200 SIEVE: The percentage of the sample finer than the #200 standard sieve.

UNCONFINED SHEAR: The shear strength of a cohesive soil sample, as measured in the unconfined state.

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS
			GRAPH	LETTER	
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-1

JOB NO.: 22G173-2 | DRILLING DATE: 4/27/22 | WATER DEPTH: Dry
PROJECT: Menifee Commerce Center Phase III | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Menifee, California | LOGGED BY: Joey Hernandez | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		19	4.5		FILL: Dark Brown Silty Clay, little fine to medium Sand, very stiff-moist		14					
		53	4.5		OLDER ALLUVIUM: Light Brown fine Sandy Clay, hard-moist		10					
5		67			Light Brown Clayey fine Sand, little Silt, slightly cemented, very dense-moist		10					
		56					12					
10		59			Light Brown Clayey fine to coarse Sand, little Silt, very dense-moist		9			29		
					Boring Terminated at 12'							

TBL 22G173-2.GPJ SOCALGEO.GDT 6/16/22

TEST BORING LOG **PLATE I-1**

SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

BORING NO. I-2

JOB NO.: 22G173-2 | DRILLING DATE: 4/27/22 | WATER DEPTH: Dry
PROJECT: Menifee Commerce Center Phase III | DRILLING METHOD: Hollow Stem Auger | CAVE DEPTH: ---
LOCATION: Menifee, California | LOGGED BY: Joey Hernandez | READING TAKEN: At Completion

FIELD RESULTS						LABORATORY RESULTS						
DEPTH (FEET)	SAMPLE	BLOW COUNT	POCKET PEN. (TSF)	GRAPHIC LOG	DESCRIPTION SURFACE ELEVATION: --- MSL	DRY DENSITY (PCF)	MOISTURE CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PASSING #200 SIEVE (%)	ORGANIC CONTENT (%)	COMMENTS
		19			FILL: Gray Silty fine to medium Sand, trace coarse Sand, little fine to coarse Gravel, medium dense-damp		7					
		61			OLDER ALLUVIUM: Red Brown Silty fine Sand, moderately cemented, very dense-damp		7					
5		51			Brown Clayey fine Sand, little Silt, moderately cemented, very dense-moist		12					
		32			Brown Silty fine to medium Sand, trace coarse Sand, little Clay, slightly cemented, dense-moist to very moist		14					
10		47					8			25		
					Boring Terminated at 12'							

TBL 22G173-2.GPJ SOCALGEO.GDT 6/16/22

TEST BORING LOG **PLATE I-2**

INFILTRATION CALCULATIONS

Project Name	Menifee Commerce Center Phase III
Project Location	Menifee, California
Project Number	22G173-2
Engineer	ME

Test Hole Radius	4	(in)
Test Depth	12.00	(ft)

Infiltration Test Hole: I-1

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	8:00 AM	25.00	9.00	0.96	NO	NON-SANDY SOILS
	Final	8:25 AM		9.08			
2	Initial	8:25 AM	25.00	9.00	0.84	NO	NON-SANDY SOILS
	Final	8:50 AM		9.07			

Test Data

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	8:55 AM	30.00	9.00	0.09	2.96	0.12
	Final	9:25 AM		9.09			
2	Initial	9:25 AM	30.00	9.00	0.07	2.97	0.09
	Final	9:55 AM		9.07			
3	Initial	9:55 AM	30.00	9.00	0.06	2.97	0.08
	Final	10:25 AM		9.06			
4	Initial	10:25 AM	30.00	9.00	0.05	2.98	0.06
	Final	10:55 AM		9.05			
5	Initial	10:55 AM	30.00	9.00	0.05	2.98	0.06
	Final	11:25 AM		9.05			
6	Initial	11:25 AM	30.00	9.00	0.04	2.98	0.05
	Final	11:55 AM		9.04			
7	Initial	11:55 AM	30.00	9.00	0.02	2.99	0.03
	Final	12:25 PM		9.02			
8	Initial	12:25 PM	30.00	9.00	0.02	2.99	0.03
	Final	12:55 PM		9.02			
9	Initial	12:55 PM	30.00	9.00	0.01	3.00	0.01
	Final	1:25 PM		9.01			
10	Initial	1:25 PM	30.00	9.00	0.01	3.00	0.01
	Final	1:55 PM		9.01			
11	Initial	1:55 PM	30.00	9.00	0.01	3.00	0.01
	Final	2:25 PM		9.01			
12	Initial	2:25 PM	30.00	9.00	0.01	3.00	0.01
	Final	2:55 PM		9.01			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)
ΔH = Change in Height (Water Level) over the time interval
r = Test Hole (Borehole) Radius
Δt = Time Interval
H_{avg} = Average Head Height over the time interval

INFILTRATION CALCULATIONS

Project Name	Menifee Commerce Center Phase III
Project Location	Menifee, California
Project Number	22G173-2
Engineer	ME

Test Hole Radius	4	(in)
Test Depth	12.00	(ft)

Infiltration Test Hole: I-2

Soil Criteria Test

Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (in)	Did 6 inches of water seep away in less than 25 minutes?	Sandy Soils or Non-Sandy Soils?
1	Initial	8:40 AM	25.00	9.70	0.84	NO	NON-SANDY SOILS
	Final	9:05 AM		9.77			
2	Initial	9:05 AM	25.00	9.70	0.60	NO	NON-SANDY SOILS
	Final	9:30 AM		9.75			

Test Data

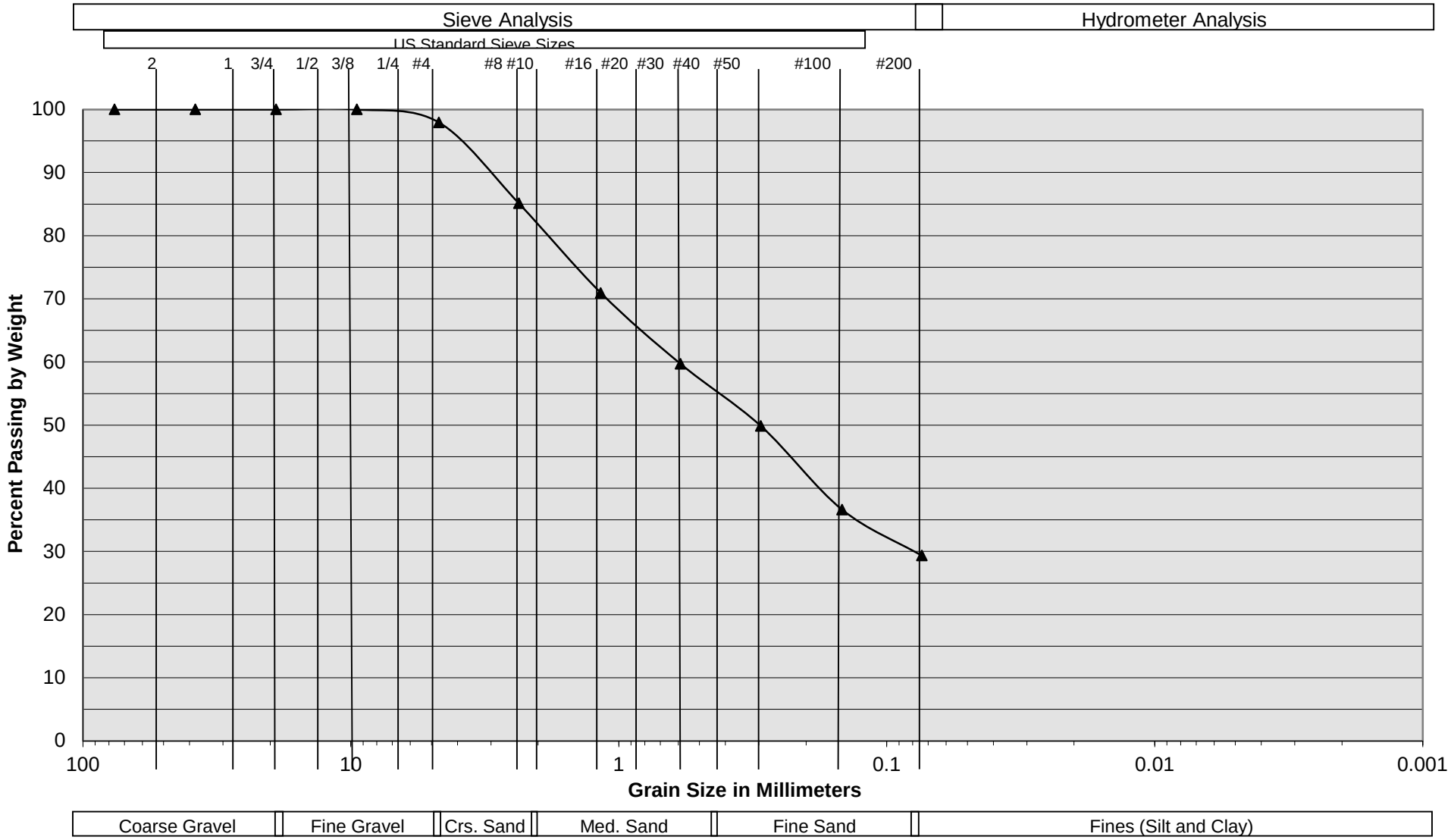
Interval Number		Time	Time Interval (min)	Water Depth (ft)	Change in Water Level (ft)	Average Head Height (ft)	Infiltration Rate Q (in/hr)
1	Initial	9:35 AM	30.00	9.70	0.07	2.27	0.12
	Final	10:05 AM		9.77			
2	Initial	10:05 AM	30.00	9.70	0.07	2.27	0.12
	Final	10:35 AM		9.77			
3	Initial	10:35 AM	30.00	9.70	0.05	2.28	0.08
	Final	11:05 AM		9.75			
4	Initial	11:05 AM	30.00	9.70	0.05	2.28	0.08
	Final	11:35 AM		9.75			
5	Initial	11:05 AM	30.00	9.70	0.04	2.28	0.07
	Final	11:35 AM		9.74			
6	Initial	11:35 AM	30.00	9.70	0.04	2.28	0.07
	Final	12:05 PM		9.74			
7	Initial	12:05 PM	30.00	9.70	0.04	2.28	0.07
	Final	12:35 PM		9.74			
8	Initial	12:35 PM	30.00	9.70	0.04	2.28	0.07
	Final	1:05 PM		9.74			
9	Initial	1:05 PM	30.00	9.70	0.02	2.29	0.03
	Final	1:35 PM		9.72			
10	Initial	2:05 PM	30.00	9.70	0.02	2.29	0.03
	Final	2:35 PM		9.72			
11	Initial	2:35 PM	30.00	9.70	0.02	2.29	0.03
	Final	3:05 PM		9.72			
12	Initial	3:05 PM	30.00	9.70	0.02	2.29	0.03
	Final	3:35 PM		9.72			

Per County Standards, Infiltration Rate calculated as follows:

$$Q = \frac{\Delta H(60r)}{\Delta t(r + 2H_{avg})}$$

Where: Q = Infiltration Rate (in inches per hour)
ΔH = Change in Height (Water Level) over the time interval
r = Test Hole (Borehole) Radius
Δt = Time Interval
H_{avg} = Average Head Height over the time interval

Grain Size Distribution

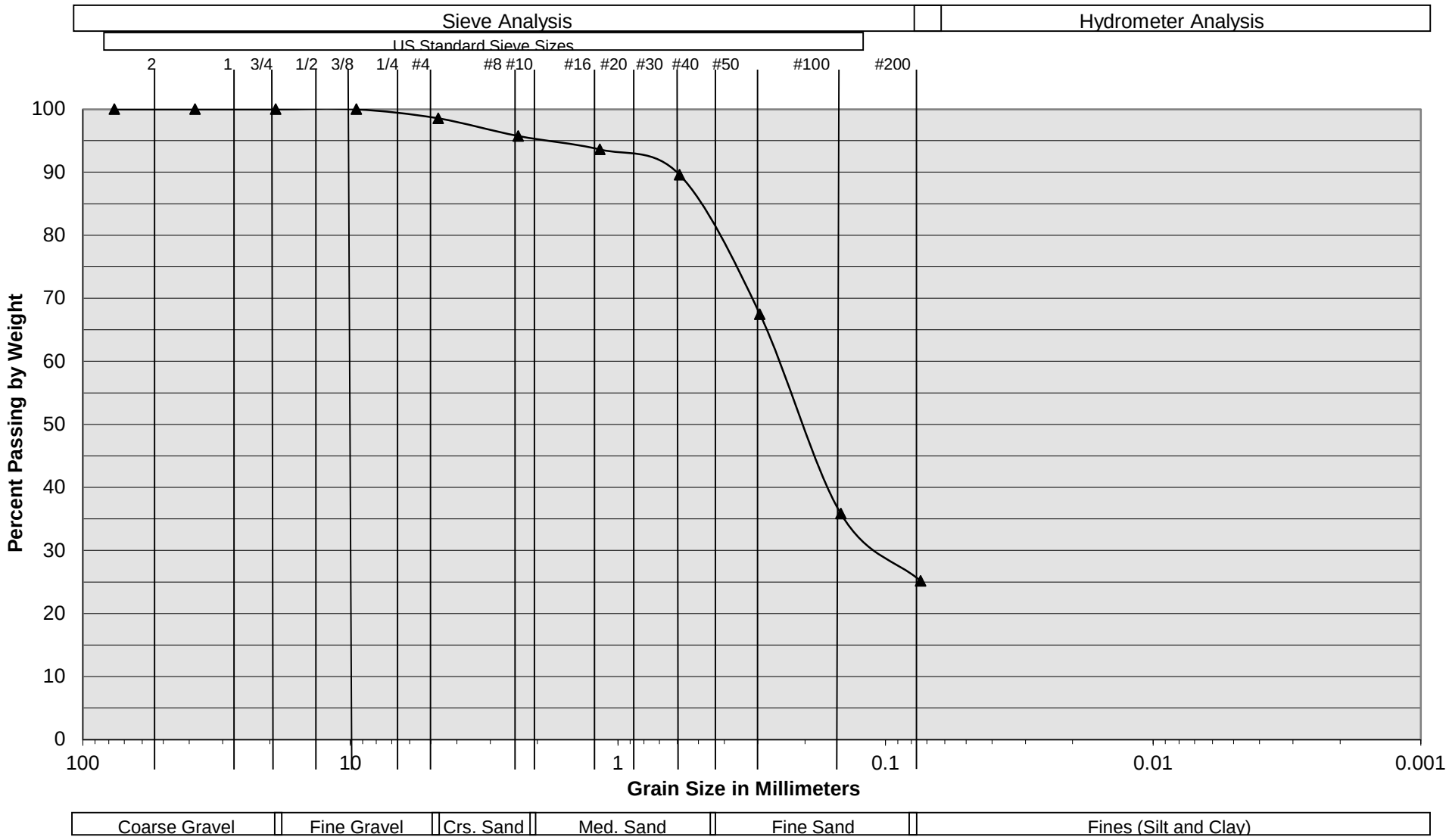


Sample Description	I-1 @ 10.5'
Soil Classification	Light Brown Clayey fine to coarse Sand, little Silt

Menifee Commerce Center Phase III
Menifee, California
Project No. 22G173-2
PLATE C- 1

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Grain Size Distribution



Sample Description	I-2 @ 10.5'
Soil Classification	Brown Silty fine to medium Sand, trace coarse Sand, little Clay

Menifee Commerce Center Phase III
Menifee, California
Project No. 22G173-2
PLATE C- 2

SoCalGeo
SOUTHERN CALIFORNIA GEOTECHNICAL
A California Corporation

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

Earth Strata Geotechnical Services, Inc.
Geotechnical, Environmental and Materials Testing Consultants
www.ESGSINC.com (951) 397-8315

PHASE I ENVIRONMENTAL SITE ASSESSMENT

Of

AGRICULTURAL PROPERTY
ASSESSOR'S PARCEL NUMBERS
331-110-027, 331-110-035, 331-110-041,
331-140-010 AND 331-140-025
MENIFEE, CALIFORNIA 92585

Prepared for:

Mrs. Carissa Hainsworth
Mike Naggar and Asociates
445 South D Street
Perris, California 92570

Prepared by:

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Temecula, California 92590
(951) 461-4028
www.earth-strata.com
E-S Project #P182161-60A

Issue Date: May 4, 2018

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A. Site Maps and Site Photographs
B. Aerial Photo Decade Report
C. Regulatory Database Search and Radius Map Report
D. File Review Information
E. Site Questionnaire

PHASE I ESA EXECUTIVE SUMMARY OVERVIEW Agricultural Property Menefee, CA				
Section Topic	**No RECs Identified**	**Non-REC Issue Identified**	**RECs Identified**	**Comments**
Historical Usage		✔		Historical Dry Farming Agriculture Usage
Regulatory Database Review (on-site)	✔			
Regulatory Database Review (nearby sites)	✔			
On-site Operations	✔			
Haz. Mat. Handling	✔			
Haz. Waste Handling	✔			
USTs/ ASTs	✔			
ACMs	✔			
LBP	✔			
PCBs	✔			
Radon	✔			
Other	✔			

SECTION I.
EXECUTIVE SUMMARY & RECOMMENDATIONS

Earth Strata Geotechnical Services, (E-S) was retained by Mrs. Carissa Hainsworth, to perform a Phase I Environmental Site Assessment (Phase I ESA or Assessment) of a site located east of Trumble Road, north of McLaughlin Road and west of Dawson Road, in Menifee, California. At the time of the April 30, 2018 site visit, the subject property consisted of five undeveloped parcels, totaling approximately 76.38 Acres. The subject site is located within a mixed-use area.

This Phase I ESA was performed in accordance with the scope and limitations of the *American Society for Testing and Materials (ASTM) Phase I ESA Standard E1527-2013,* (Equivalent to the USEPA's All Appropriate Inquiry [AAI] Standard), the scope of work defined in this report, as well as the signed service agreement. The following summarizes E-S's independent conclusions and best professional judgment based upon information available to us at the time of this Assessment.

During the site visit, the E-S Assessor was not accompanied by anyone, because the site is undeveloped and is vacant land. Due to the site being undeveloped and vacant the "Key Site Manager" was identified as Mrs. Carissa Hainsworth. As defined by ASTM E1527-2013, the Key Site Manager is that person having good knowledge of the uses and physical characteristics of the subject property, and in a position to provide reasonably accurate information for the Key Site Manager Environmental Questionnaire. The questioner was performed by E-S and can be found in Appendix F. Based upon the limited site reconnaissance, historical review, regulatory records review, and other information detailed within this report; this Assessment did not identify any evidence of ASTM Recognized Environmental Conditions (RECs) or other issues in connection with the subject property.

RECOMMENDATIONS

Based on the results of this Phase I ESA, no further investigation is recommended for this site. Although some agricultural use has may have been identified, this area is known for dry farming or "dry-land grain farmed" since the 1800's.

An Executive Summary Overview is also included in the previous section. However, when making any decisions concerning the findings of this Assessment, please also refer to the entirety of this report, which may present other items of interest that are not discussed in the Executive Summary, or further details regarding the above items. In addition, please refer to the Data Gaps section (IV-H) of this report regarding information that may have been unavailable or incomplete which may have a bearing on the findings or usage of this report.

SECTION II.
SCOPE OF WORK & LIMITATIONS

PURPOSE

The primary goal of this Phase I Environmental Site Assessment is to assist the client in satisfying one of the requirements to qualify for the "innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on CERCLA liability" (42 U.S.C. § 9601 et. seq.). Qualification for these limitations is predicated on the assumption that "…the defendant must have undertaken, at the time of acquisition, all appropriate inquiry into the previous ownership and uses of the property consistent with good commercial or customary practice in an effort to minimize liability…." The secondary goal of this Assessment is to provide information that will assist in evaluating the risk of potential significant value impairment of the security interest due to environmental impacts.

PROTOCOL

The *American Society for Testing and Materials (ASTM) Phase I ESA Standard E1527-2013* is the most current method used in attempting to perform the due diligence required to achieve the above purpose. The E1527-2013 Standard was created by the ASTM "…in an effort to define good commercial and customary practice in the United States of America for conducting an environmental site assessment.…" and is equivalent to the USEPA's All Appropriate Inquiry [AAI] Standard issued November 1, 2013. The ASTM Standard E1527-2013 is intended to identify recognized environmental conditions (RECs) in connection with a given property. The term recognized environmental conditions is not intended to include "*de minimus*" conditions that generally do not present a material risk of harm or that are unlikely to be the subject of enforcement actions by governmental agencies. Other conditions or issues that are beyond the ASTM scope may also be discussed in this report, as detailed within each section.

SCOPE OF WORK

Utilizing ASTM Standard E1527-2013, as well as the scope of work discussed below and in the work authorization document, this Assessment involved: A site reconnaissance of the subject property, limited observations of adjoining properties, a review of the historical usage of the subject property, and a review of relevant documentation provided by various public and private sources (including the client and/or owner of the subject property) to identify conditions indicative of releases or threatened releases of hazardous substances, as defined in CERCLA Section 101 (14) U.S.C. § 312.1(c) evaluate the presence or likely existence of:

- Recognized environmental conditions, specified by ASTM E1527-2013 as: "the presence or likely presence of any hazardous substances or petroleum products on a property under conditions that indicate an existing release, a past release, or a material threat of a release of any hazardous substances or petroleum products

into structures on the property or into the ground, groundwater or surface water of the property."

- A brief evaluation and assessment of potential environmental issues which may not rise to the level of recognized environmental conditions, such as: obviously improper hazardous material or waste handling, suspect asbestos-containing materials, lead-based paint, polychlorinated bi-phenyls, and radon gas.

LIMITATIONS

As discussed in ASTM E1527-2013, no Phase I ESA can completely eliminate uncertainty regarding the potential for RECs in connection with a subject property. This investigation is simply intended to reduce uncertainty within reasonable limits of time and cost.

Refer to Section VI-A for a brief discussion of some (but not necessarily all) specific limitations to E-S's subject property observations at the time of the site visit. The observations contained within this Assessment are based upon conditions readily observable during the site visit. These observations are typically unable to address conditions of areas not inspected, hidden from view, subsurface soil, groundwater, underground storage tanks, neighboring properties, and the like, unless specifically mentioned. It is not the purpose of this Assessment to determine the actual presence, or degree or extent of contamination (if any) at the subject property. Unless specifically noted within this report, this Assessment does not include observations, testing, coring, or sampling analysis to address groundwater, soil, or extraneous materials contamination (including mold, bio-hazardous or radiologic issues) in or on the subject property. E-S also is not providing geological interpretations or recommendations. Potential Vapor Intrusion issues from on or off-site sources are not evaluated. Electromagnetic issues (e.g., proximity to high-voltage power lines) are also not included. This Assessment does not include or address reasonably ascertainable environmental liens recorded against the subject property, unless stated.

E-S makes no warranties or guarantees as to the accuracy or completeness of information obtained from or compiled by others. Information may also exist which was beyond the scope of this investigation, or was not provided to E-S that may have an impact on the conclusions of this Assessment. This Assessment does not attempt to address past or forecast future site conditions. E-S also cannot forecast or be responsible for changes in regulatory guidelines or protocols, industry standards or the like, which may affect the conclusions and/or future usage of this report.

This Assessment has been conducted and prepared in accordance with generally accepted practices and procedures exercised by reputable professionals under similar circumstances. E-S makes no other warranties or guarantees, either expressed or implied, as to the findings, opinions, or recommendations contained in the report, or as to the existence or non-existence of RECs or other issues at the subject property.

SECTION III.
GENERAL SITE DESCRIPTION

Earth Strata Geotechnical Services, (E-S) performed a Phase I Environmental Site Assessment (Phase I ESA or Assessment) of a site located east of Trumble Road, north of McLaughlin Road and west of Dawson Road, in Menifee, California. At the time of the April 30, 2018 site visit, the subject property consisted of four undeveloped parcels, totaling approximately 76.38 Acres. The subject site is located within a mixed-use area.

During the site visit, the property has one small manufactured home with a garage (26340 Trumble Road) surrounded by tilled fields. Power lines are located along Sherman Road and one pole mounted transformer was observed. EMWD and Riverside County Flood Control border the property to the south. The subject property location and pictures are shown on various Figures in Appendix A.

Exceptions to ASTM E 1527-05

A key site manager was not interviewed because the subject site is mostly uninhabited except for the small residential parcel at 26340 Trumble Road, where the assessor spoke to Alejandro Soberanes (occupant). The majority of the site is undeveloped and non-populated usage of the site was also established through other data sources in the report. No regulatory violations were identified for the subject site or the adjoining properties in the EDR database, and recognized environmental conditions were not observed during the visual survey.

A. CLIENT PROVIDED INFORMATION

As discussed in ASTM E1527-2013, the user (e.g., Client) is required to perform certain tasks or provide certain information to E-S in order to identify potential RECs. Tasks or information to be provided by the Client include: 1) review of judicial and title records for environmental liens, environmental deed restrictions or activity and use limitations (AULs); 2) provide specialized, actual, commonly known or reasonably ascertainable knowledge regarding the property; and, 3) identify reasons for a significantly lower purchase price (if applicable). The client has not provided any other information.

B. ADJOINING AND ADJACENT PROPERTIES

As discussed in ASTM E1527-2013, an adjoining property is any real property whose border is contiguous or partially contiguous with the subject property, or would be if the properties were not separated by a roadway, street or other public thoroughfare. For the purposes of this report, an adjacent property is any real property located within approximately one block or less of the subject property's border.

Specifically, the subject property is bordered by the following:

North: Immediately by residential properties and a sand / gravel pit mining property.

East: Immediately by vacant and commercial properties.

South: Immediately by Riverside County Flood Control channel.

West: Immediately by Trumble Road and vacant undeveloped properties.

C. USGS TOPOGRAPHIC MAP

The subject property's physical setting was researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 2,000 feet, and shows physical features such as wetlands, roadways, mines, and buildings. The USGS 7.5 Minute Quad Map was used as the Standard Physical Setting Source, and is sufficient as a single reference. The Romoland, California Quad Map shows no physical features that are likely to environmentally impact the subject property. The subject property is identified as a rural residential developed, rectangular property. No mines, aboveground storage tanks, or wetlands were depicted in the immediate area of the subject property; however, there is an intermittent wash to the west and to the east. The elevation of the subject property is approximately 1431 feet above mean sea level with a gentle topographic gradient to the southeast (USGS Romoland 7.5' Quadrangle). A copy of the map can be found in the Appendix D.

D. PHYSICAL AND GENERAL HYDROGEOLOGIC CHARACTERISTICS

The subject property's physical setting was researched employing a United States Geological Survey (USGS) 7.5 Minute Topographic Quadrangle (Quad) Map relevant to the subject property. The USGS 7.5 Minute Quad Map has an approximate scale of 1 inch to 24,000 feet, and shows physical features such as wetlands, roadways, mines, and buildings. The USGS 7.5 Minute Quad Map was used as the Standard Physical Setting Source, and is sufficient as a single reference.

The Romoland, California Quad Map shows no physical features that are likely to environmentally impact the subject property. The subject property is identified as a rural undeveloped, rectangular property. No mines, aboveground storage tanks, or wetlands were depicted in the immediate area of the subject property. The elevation of the subject property is approximately 1431 feet above mean sea level with a gentle topographic gradient to the northeast (USGS Romoland 7.5' Quadrangle).

D. GENERAL HYDROGEOLOGIC CHARACTERISTICS

The subject property is within the San Jacinto Groundwater Basin, underlying the San Jacinto Watershed. The San Jacinto Groundwater Basin underlies several valleys in the southwestern portion of Riverside County. The basin is bounded on the southeast by the Vandeventer Flat Groundwater Basin and otherwise bounded by impermeable rocks of the San Jacinto Mountains. The valley is drained by the South Fork of the San Jacinto River and receives an average annual precipitation ranging from about 14 to 28 inches. (California Department of Water Resources (DWR). 1975. *California's Ground Water*. Bulletin 118.). Groundwater in the basin is found in Quaternary age younger and older alluvium that consists of clay, silt, sand, and gravel. Alluvial deposits may reach as about 100 feet in thickness, but are more commonly less than about 45 feet thick. Groundwater is also produced from residuum and from fractured crystalline rocks below the basin. (California Department of Water Resources (DWR). 1975. *California's Ground Water*. Bulletin 118.). Recharge of this basin is likely from percolation of precipitation and runoff, and subsurface flow from San Jacinto Mountains and Lake Perris. Site-specific groundwater information for the subject property was unavailable. Please see the EDR Summary Radius Map Report for Hydrologic and Geologic information, Appendix D.

SECTION IV.
HISTORICAL REVIEW

The site historical review is used to develop an understanding of the previous uses of the subject property and surrounding area in an effort to identify the likelihood of past uses, or activities having environmentally impacted, the subject property. The historical review consisted of a search of various public and private Standard Historical Sources, as detailed in the sections below.

As defined by ASTM E1527-2013, a Standard Historical Source is considered complete if the information contained within the source identifies all uses of the subject property from the time the property was first used for residential, agricultural, commercial, industrial or governmental purposes. Ideally, the information should be available in either five-year intervals or site milestone events (i.e., initial construction activities, demolition activities, etc.). However, available public and private historical sources do not always fulfill this goal, in which case, the closest approximation is made based upon the sources readily available at the time of historical review.

Historical Review Summary: From the historical information review discussed below, E-S concludes that the manufactured home was built around 2006 on the subject property and the surrounding parcels have never been developed and primarily used for agriculture up until the late 1980s. No dry cleaners, gasoline stations, major landfills, military bases, or heavy industrial businesses were identified on the subject property. Currently the site has the manufactured home and the other parcels are tilled and undeveloped.

A. AERIAL PHOTOGRAPH REVIEW

Aerial photographs were reviewed by E-S to evaluate past land-use patterns of the subject property and vicinity. The photos were supplied by EDR and are from the following years 1938, 1949, 1953, 1961, 1967, 1978, 1985, 1989, 1997, 2002, 2006, 2010 and 2014. Copies of representative aerial photographs can be found in Appendix C. This review revealed the following:

1938 to Present

The subject property is in a rural area, and the parcel with the home was developed sometime in the mid 2000's. No surrounding structures are present until the 1960's. The surrounding area usage consists of rural agricultural land and single family residential development. The subject property is undeveloped and appears to have had agricultural usage from 1938 to the early 80's. The surrounding area has continued to grow with residential and commercial properties and the typical infrastructure improvement of roads and utilities.

B. BUILDING PERMIT REVIEW

In an effort to evaluate the development history of the subject property, E-S reviewed the Riverside County, Department of Planning website (http://www3.tlma.co.riverside.ca.us/). Review of this information indicated the Assessor's Parcel Numbers for the subject property is 331-110-027, 331-110-35, 331-110-041, 331-140-010 and 331-140-025. The recorded lot size for all of the above is approximately 76.38 acres. The legal description is not available, Thomas Bros. page 838, grid C2 and D2, Township and Range is T5S R3W SE15. No other information significant to this report was obtained from the Assessor's data. The data can also be found in the Appendix E.

C. SANBORN FIRE INSURANCE MAP REVIEW

E-S requested Sanborn Fire Insurance Maps for the subject property; however, no maps were available for the subject property.

D. CITY STREET DIRECTORY REVIEW

E-S did not request a "City Street Directory" for the area of the subject property due to the rural environment.

E. HISTORICAL TOPOGRAPHIC MAP REVIEW

Historical topographic maps were reviewed on line by E-S. No significant additional information was revealed after review. A map can be found Appendix B.

F. INTERVIEWS

As specified in ASTM E1527-2013, interviews will be conducted with parties including present land owners and occupants, past land owners and occupants, and adjoining property owners, as appropriate and as available. E-S did not interview a Key Site Manager, however Mr. Alejandro Soberanes (occupant) and Mrs. Carissa Hainsworth (owner/developer) was able to help answer questions and fill out the questionnaire. No significant additional information was revealed after the interview. During the site visit, the E-S Assessor was not accompanied by the Key Site Manager due to the rural vacant state of the properties.

G. RECORDED LAND TITLE RECORDS

As specified in ASTM E1527-2013 *recorded land title records* means records of historical fee ownership, which may include leases, land contracts and AULs on or of the *property* recorded in the place where land title records are, by law or custom, recorded for the local jurisdiction in which the *property* is located (often such records are kept by a municipal or county recorder or clerk). Such records may be obtained from title companies or directly from the local government agency. Information about the title to the *property* that is recorded in a U.S. district court or any place other than where land title records are, by law or custom, recorded for the local jurisdiction in which the *property* is located, are not considered part of *recorded land title records*, because often this source will provide only names of previous *owners*, lessees, easement holders, etc., and little or no information about uses or occupancies of the *property*, but when employed in combination with another source *recorded land title records* may provide helpful information about uses of the *property*. This source cannot be the sole historical source consulted. If this source is consulted, at least one additional standard historical source must also be consulted. E-S's performed a search of the Riverside County Assessor's office, the assessor's report and parcel map can be found in Appendix E.

A title report was not provided; however a search was conducted on-line at the Riverside County Land information site (http://www3.tlma.co.riverside.ca.us/pa/rclis/index.html). Such a report typically does not list all documents related to the subject property, simply those that the title insurer wants to exclude from coverage and/or that are of potential interest to the transaction. Title reports may also be one method to evaluate the environmental liens search required by the ASTM E1527-2013 standard, which is required to be performed by the report User. A liens/use limitations search by the User is required by the ASTM/AAI standard 180 days or less prior to acquisition of a property.

H. DATA GAPS

As specified in ASTM E1527-2013, data gaps are defined as "a lack or inability to obtain information required by the standards and practices listed in the regulation despite good faith efforts by the Environmental Professional or prospective landowner to gather such information". Data failure occurs when historical research does not identify standard historical sources that are "reasonably ascertainable" and "likely to provide useful information to identify prior uses of the property". Per ASTM E1527-13, the assessment must document data failure and give reasons why historical sources were not available or excluded (if applicable). Based on E-S's research, no significant data gaps were identified for the subject site.

SECTION V.
AGENCY RECORDS REVIEW

In an effort to evaluate whether the subject property and/or nearby sites have reported USTs, hazardous waste generation, or hazardous material releases, regulatory information from the federal, state, and local agencies listed below were reviewed. The database report was compiled by a third-party database provider and is reportedly the most recent database information available from each agency. A copy of the database report is included in the appendix. According to the database provider, their search of the various databases conforms to ASTM E1527-2013 Standards. However, the accuracy of the information provided by the agencies is not without error or omission, and the information listed is limited to that which was reported to or gathered by that agency. A limited discussion of the number of sites identified, and of their potential impact to the subject property, follows this page. In addition, E-S may request state and/or local regulatory agency information for the subject property, targeting those agencies most likely to provide information useful for this Assessment. The primary databases reviewed and their general search range criteria are below:

Federal Database	**Search Range**
USEPA NPL/Superfund databases:	Target Property to 1.0 mile
USEPA CERCLIS databases:	Target Property to 0.5 mile
USEPA RCRIS facilities databases	
Corrective Action Sites:	1.0 mile
TSD Facilities:	0.5 mile
Generators:	0.25 mile
USEPA ERNS database:	Target Property
US Engineering Controls:	0.5 mile
US Institutional Controls:	0.5 mile
US DOD/FUDS databases:	1.0 mile
US Brownfields:	0.5 mile
State/Local Database	**Search Range**
State Superfund databases:	
Hist Cal-Sites:	1.0 mile
CA Bond Exp. Plan	1.0 mile
State Landfills database:	0.5 mile
State Cortese	0.5 mile
State/Local LUST databases:	0.5 mile
State Spills databases:	
SLIC:	0.5 mile
CHMIRS:	Target Property
State/Local UST/AST databases:	0.25 mile
State Liens database:	Target Property
State Deed database:	0.5 mile
State VCP database:	0.5 mile
State EnviroStor/Response databases:	1.0 mile
State HAZNET database:	Target Property
Local Haz-Mat/Cleanup databases:	Target Property

A. REVIEW OF FEDERALLY REPORTED ENVIRONMENTAL DATA

The review of the federal environmental databases listed below attempts to identify environmental problem sites, activities, and occurrences from the records of the U.S. Environmental Protection Agency (USEPA). The detailed listing, and a map showing the location of the sites relative to the subject property, is included in the appendix.

National Priorities List (NPL) of Superfund Sites:
The NPL is the USEPA's database of hazardous waste sites currently identified and targeted for priority cleanup action under the Superfund program. This search includes Proposed NPL sites, Delisted NPL sites, and NPL Recovery sites. NPL sites may encompass relatively large areas. As such, polygon coverage for the site boundaries (for a majority of the NPL sites), as produced by the EPA may be provided. A search of the NPL database identified the following number of Superfund sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

National Priorities List Liens (NPL Liens):

The NPL Liens database contains a list of filed notices of Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. A search of the NPL Liens database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980:
Mandated as part of the 1980 Superfund Act, the CERCLIS (Comprehensive Environmental Response, Compensation and Liability Information System) list is an EPA compilation of the sites investigated, or currently being investigated, for a release or potential release of a regulated hazardous substance under the CERCLA regulations. A search of the CERCLIS and CERCLIS-NFRAP (no further remedial action planned) databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

RCRIS Corrective Action (RCRIS-CA) Sites:

The RCRIS-CA report contains information pertaining to hazardous waste handling facilities which have conducted, or are currently conducting corrective actions, as regulated by the Resource Conservation and Recovery Act. A search of the RCRIS-CA list identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Resource Conservation and Recovery Act Information System (RCRIS) Treatment, Storage, and Disposal (TSD) Facilities:

The RCRA program identifies and tracks hazardous waste from generation source to the point of ultimate disposal. The RCRIS-TSD facilities database is the composite of reporting facilities that transport, store, or dispose of controlled or hazardous waste. Identification on this list does not indicate that a site has impacted the environment. A search of the RCRIS-TSD database identified the following number of facilities within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

RCRIS Generator Facilities:

The RCRIS program identifies and tracks hazardous waste from generation source to the point of ultimate disposal. The RCRIS generator facilities database (large and small quantity generators and various derivations) is the composite of reporting facilities that generate hazardous waste. Identification on these lists does not indicate that a site has impacted the environment. A search of the RCRIS facilities databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Emergency Response Notification System (ERNS):

The ERNS database is the historical record of releases of hazardous substances reported to the USEPA. A search of the ERNS database identified the following number of releases within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

EPA Engineering and Institutional Controls (US ENG/INST CONTROL) Sites:

These databases include listings of sites with engineering or institutional controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are required as part of the institutional controls. A search of the US ENG/INST CONTROL database(s) identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Department of Defense (DOD) Sites:

The Unites States Geological Survey (USGS) maintains the DOD database, which consists of federally owned or administered lands, administered by the DOD, that have an area equal to or greater than 640 acres of the United States, Puerto Rico, and the US Virgin Islands. A search of the DOD database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Formerly Used Defense Sites (FUDS):

The U.S. Army Corps of Engineers database contains a listing of locations of Formerly Used Defense Sites (FUDS) where the U.S. Army Corps of Engineers is actively working or will take necessary cleanup actions. A search of the FUDS database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

US Brownfields Sites (Brownfields):

The US Brownfields site includes brownfields properties addressed by Cooperative Agreement Recipients (CAR) and brownfields properties addressed by Targeted Brownfields Assessments (TBA). EPA's TBA program is designed to help states, tribes, and municipalities minimize the uncertainties of contamination often associated with brownfields. Cooperative Agreement Recipients (states, political subdivisions, territories, and Indian tribes) become Brownfields Cleanup Revolving Loan Fund (BCRLF) cooperative agreement recipients when they enter into BCRLF cooperative agreements with the USEPA. EPA selects BCRLF cooperative agreement recipients based on a proposal and application process. BCRLF cooperative agreement recipients must use EPA funds provided through BCRLF cooperative agreement for specified brownfields-related cleanup activities. A search of the Brownfields database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

CERCLA Lien Information (LIENS 2):

A Federal Superfund Lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties. A search of the LEINS 2 database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Facility Index System (FINDS) sites:

The FINDS Report is a computerized inventory of all facilities that are regulated or tracked by the U.S. Environmental Protection Agency. These facilities are assigned a unique identification number that serves as a cross-reference for databases in the EPA's program system. Identification on this database does not indicate that a site has impacted the environment. A search of the FINDS database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

B. REVIEW OF STATE-REPORTED ENVIRONMENTAL DATA

Results of the state regulatory records search follow. Each section begins with a general description of the databases searched and the corresponding responsible state or local agency. The detailed listing, and a map showing the location of the sites relative to the subject property, is included in the appendix.

State Hazardous Waste Site (SHWS) Databases:

State Hazardous Waste Site records are the states' equivalent to CERCLIS. The Department of Toxic Substances Control (DTSC) Hist Cal-Sites database contains potential or confirmed hazardous substance release properties. The Calsites database was created by the Department of Toxic Substances and Control (DTSC), but DTSC no longer up-dates the Calsites database. The Calsites database was replaced by the EnviroStor database (see EnviroStor section below). The CA Bond Expenditure Plan database contains the Department of Health Services site-specific expenditure plan, which is the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. A search of the State Hazardous Waste Site database(s) identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Solid Waste Facilities, Landfills and Recycling Facilities:

The State Solid Waste Facilities and Landfills and Recycling databases include an inventory of active, closed, and inactive solid waste disposal facilities, landfills, refuse transfer stations, and recycling facilities (non-landfill sites). A search of these databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
One	None

Historical Cortese Database:

The Historical Cortese list contains hazardous waste and substance sites compiled pursuant to Assembly Bill 3750 (Cortese, Chapter 1048, Statutes of 1986). The information included in this list was compiled with information from the California DTSC, the State Water Resources Control Board, and the California Waste Management Board. This database contains primarily LUST sites, although other types of sites may be included. A search of the Cortese database identified the following number of sites within the specified search range:

Number of Sites	Number Listed at Subject Property
One	None

Leaking Underground Storage Tanks (LUSTs):

State and/or local agencies maintain inventories of LUSTs (also known as LTANKS) in a statewide database. A search of the LUST database identified the following number of reported LUST sites within the specified search range:

Number of Sites	Number Listed at Subject Property
One	None

State/Local Spills Databases:

The Spills, Leaks, Investigations, and Cleanup (SLIC) Cost Recovery Listing program is designed to protect and restore water quality from spills, leaks, and similar discharges. The database(s) included in this section are the states' equivalent to the ERNS report and generally contain information for reported hazardous material/waste surface or groundwater contamination release investigations reported in that state or locality. The California Hazardous

Material Incident Report System (CHMIRS) database contains information on reported hazardous waste material incidents (accidental releases or spills). A search of these databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Underground Storage Tanks (USTs)/Aboveground Storage Tanks (ASTs):

USTs are regulated under Subtitle I of the RCRA (as well as various state regulations), and must be registered with the State Underground Storage Tank Program. These are registered USTs only, and identification on this list(s) does not necessarily indicate that the site has impacted the environment. This search includes review of the Active UST Facilities (UST) database, Facility Inventory Database (CA FID UST), Hazardous Substance Storage Container Database (HIST UST), and SWEEPS UST Listing database (SWEEPS UST). Also potentially included in this section are sites identified on historic UST databases that are no longer maintained. The AST database is the State Water Resources Control Board's Hazardous Substance Storage Container Database for registered ASTs. A search of these UST and AST databases identified the following number of sites within the specified search range:

Number of Sites	Number Listed at Subject Property
One	None

Environmental Liens Listing (LIENS):

The Department of Toxic Substances Control's (DTSC) LIENS database includes a listing of property locations with environmental liens for California where DTSC is a lien holder. A search of the LIENS database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Deed Restriction Listing (DEED):

The Department of Toxic Substances Control's (DTSC) DEED database includes a listing of Site Mitigation and Brownfields Reuse Program (SMBRP) Facility Sites with Deed Restrictions and Hazardous Waste Management Program Facility Sites with Deed/Land Use Restrictions. The SMBRP list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active, and some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners. A search of the DEED database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Voluntary Cleanup Program (VCP):

The Department of Toxic Substances Control's (DTSC) VCP database contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have requested that DTSC oversee the investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs. A search of the VCP database identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

State Response/EnviroStor Databases:

The Department of Toxic Substances Control's (DTSC) RESPONSE database identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. The DTSC's Site Mitigation and Brownfields Reuse Program's (SMBRPs) EnviroStor database identifies sites that have reported contamination or sites for which there may be reason to investigate

further. The database includes the following site types: Federal Superfund Sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in Cal-Sites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites. A search of the Response and EnviroStor databases identified the following number of sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
One	None

State and/or Local Agency Generators (HAZNET):

The HAZNET data is extracted from copies of hazardous waste manifests kept by the Cal-EPA, DTSC. These manifests track hazardous wastes from generation source to the point of ultimate disposal. Permit data is generally culled from local agency database(s) for hazardous material handlers and generators. Identification on these lists does not indicate that a site has impacted the environment and the data has not always been verified for accuracy by the DTSC or local agencies. A search of the HAZNET and Permit data identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

National Pollutant Discharge Elimination System (NPDES) Database:

The National Pollutant Discharge Elimination System (NPDES) includes sites that have had or have a permit for the discharge of wastewater or stormwater issued by the Regional Water Quality Control Board or a local agency (e.g., Public Works Department). The NPDES data identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

State and/or Local Agency Air Emissions Database (EMI):

The EMI data is extracted from permits for air emissions kept by the state or local air resources agency. Identification on these lists does not indicate that a site has impacted the environment. A search of the EMI database identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

Notify 65 Database:

Notify 65 listings generally indicate that some type of release and/or groundwater impact have occurred which was required to be reported under Proposition 65 rules. A search of the Notify 65 data identified the following number of reported sites within the specified database search range:

Number of Sites	Number Listed at Subject Property
None	None

EDR Historical Auto Stations, Historical Cleaners, & Manufactured Gas Plants Databases:

These databases include former gas stations, auto repair shops, dry cleaners, Laundromats, and manufactured gas plants that are typically no longer active. Identification on these databases does not necessarily indicate that such activities actually occurred at that site or that a site has impacted the environment. A search of these databases identified the following number of sites within the specified database search range:

Type of Site	Number of Sites	Number Listed at Subject Property
Historical Auto Stations	None	None
Historical Cleaners	None	None
Historical Manufactured Gas	None	None

Orphan Unplottable Sites:
"Orphan" sites are those which could not be plotted by the database provider using conventional geo-coding methods, typically because the information provided in the original government database was unclear, incorrect or missing. A listing of orphan sites (if any) appears at the end of the database, immediately after the last plottable site description.

E-S reviewed the orphan list for sites with the same name as the subject property (if applicable) and/or the same or similar property address. This review is inherently limited by the incomplete and/or possibly incorrect data reported in the orphan listings. For orphans apparently not related to the subject property, only those obviously located adjoining or within a short distance that may affect the property are discussed. Orphan sites which are also listed in the plotted section are not re-discussed. E-S's review of the orphan list revealed no obvious sites of concern listed at or adjoining the subject property.

C. LOCAL AGENCY RECORDS SEARCH

The following is a discussion of the results of E-S's written records requests, online regulatory database review, and/or personal/telephone contacts (as applicable) made to state and/or local government agencies in an effort to obtain potential information relevant to the subject property:

County of Riverside Environmental Department:

E-S contacted the County of Riverside Environmental Health in an effort to evaluate whether hazardous material incidents, USTs, and/or LUSTs have been reported at the subject property address (2630 Trumble Road). The County of Riverside Environmental Department, had no incidents that were known to them.

California EPA - Department of Toxic Substances Control (DTSC):

E-S also reviewed CalEPA-DTSC's Hazardous Waste Tracking System (HWTS) online database (http://hwts.dtsc.ca.gov) in an effort to identify potential hazardous waste generation/disposal activities associated with the subject property address. A search was not performed, because the property does not have a physical address, there is no way to track hazardous waste generators through Department of Toxic Waste.

California Department of Water Resources:

E-S contacted the California Department of Water Resources in an effort to evaluate whether any state listed water wells or water resources are located on the subject property address. No water wells are located on the property.

D. TRIBAL RECORDS SEARCH

According ASTM E1527-2013, records for local and tribal records shall be checked to satisfy all appropriate inquiry for this assessment. The following is a discussion of the results of E-S's written records requests, online regulatory database review, and/or personal/telephone contacts (as applicable) made to tribal governmental agencies in an effort to obtain potential information relevant to the subject property:

The subject property is not located on tribal property and therefore no inquiry was necessary.

SECTION VI.
SITE VISIT OBSERVATIONS

A. SITE STRUCTURE CHARACTERISTICS

At the time of the site visit, the subject property consisted of five agriculturally developed parcels of land, totaling approximately 76.38 Acres. The property consists of one small residential parcel and four tilled undeveloped parcels of land. No pesticides, sumps, clarifiers, swales, or surface impoundments potentially containing hazardous materials were observed on the subject property. Weather conditions at the time of the site visit consisted of clear skies, with temperatures in the 60s.

B. WASTEWATER AND STORMWATER MANAGEMENT

No wastewater was observed at the subject site.

Storm water and surface run-off from the subject property and adjacent properties inter the natural storm water and flood control conveyance systems.

C. POTABLE WATER SUPPLY

The subject property currently utilizes water from Eastern Municipal Water District.

E. BUSINESS OPERATIONS DESCRIPTION

According to the Riverside County Department of Planning, the subject property zone is “RR and AG”, agricultural. E-S’s research indicates no dry cleaners, gasoline stations, military bases, or major manufacturing operations have occupied the subject property.

SECTION VII.
HAZARDOUS MATERIAL/WASTE OBSERVATIONS

A. HAZARDOUS MATERIALS HANDLING AND STORAGE

No hazardous materials were observed at the subject property. No significant staining or spillage was observed in any of the areas inspected. No other significant hazardous materials handling or storage were observed on the subject property during the site visit.

B. WASTESTREAM GENERATION, STORAGE AND DISPOSAL

During the inspection, no hazardous waste generation, storage, or improper hazardous waste disposal was observed on the subject property. Stained or discolored sinks, drains, catch basins, drip pads, or sumps were not observed. Additionally, significant spills or staining were not observed at the subject property.

C. SOLID WASTE DISPOSAL

During the inspection, no solid waste generation, storage, or improper solid waste disposal was observed on the subject property.

D. ABOVEGROUND STORAGE TANKS (ASTs)

Visual or physical indicators of current or former ASTs were not observed at the subject property during the site visit.

E. UNDERGROUND STORAGE TANKS (USTs)

As discussed in the Section V (Agency Records Review) of this report, no USTs were reported at the subject property. In addition, no visual or physical evidence of current or past USTs were discovered during the site visit in the readily visible areas of the property. In particular, E-S searched for: fill pipes, vent pipes, man-ways, manholes, access covers, and or concrete pads not homogeneous with surrounding surfaces, concrete built-up areas potentially indicating pump islands, abandoned pumping equipment, or fuel pumps.

SECTION VIII.
OTHER POTENTIAL ISSUES OF CONCERN

A. PCB-CONTAINING EXTERIOR ELECTRICAL TRANSFORMERS

One pole mounted transformer was observed on the subject property and appeared in good condition.

B. OTHER PCB-CONTAINING INTERIOR OR EXTERIOR EQUIPMENT

During the on-site inspection, no evidence was observed of any equipment likely containing PCB-contaminated fluid (e.g., interior electric transformers, hydraulic elevators, hydraulic hoists/lifts, hydraulic loading dock ramps, other fluid containing equipment, etc.).

C. SUSPECT ASBESTOS-CONTAINING MATERIALS (ACMs)

One residential house is present on the property, and asbestos-containing materials (ACMs) identification are beyond the scope of this assessment.

D. LEAD-BASED PAINT (LBP)

One residential house is present on the property, and lead-based paint (LBP) identification are beyond the scope of this assessment.

E. LEAD IN DRINKING WATER

Federal regulations limit lead in publicly supplied water to no more than 15 parts per billion (ppb), however, the most common source of lead in tap water is from interior plumbing systems (piping, connections, faucets, etc.). Children are the most susceptible to possible health effects from consuming lead-tainted drinking water. Due to the nature of the property being undeveloped, no observations of these sources were observed. The presence or absence of elevated lead concentrations in the water can only be confirmed through laboratory testing, and such analysis is beyond the scope of this assessment.

F. AIR QUALITY

Unusual smells, noxious odors, or visual emissions were not observed during the inspection of the subject property. However, these observations are general in nature and should not be construed as an air quality assessment.

G. RADON

According to the USEPA, the general area of the site has a predicted average indoor screening level of less than the EPA guideline action level of 4.0 picoCuries per liter of air (EPA Radon Zone Level of 1). Therefore, based upon the reported subsurface characteristics of the area, the subject property exhibits no potential for high-level radon exposure.

H. RAILROAD RIGHTS-OF-WAY

There are several potential environmental risks associated with railroad rights-of-way, including the usage of herbicides, pesticides, petroleum materials and related heavy metals (e.g. arsenic) to maintain the tracks, as well as the potential spillage of hazardous materials from railcars. During the site visit, no railroad rights-of-way, spurs, or related features were observed immediately adjoining the subject property.

SECTION IX.
ADJOINING PROPERTY OBSERVATIONS

As discussed below, based upon limited observations of the adjoining properties from publicly accessible locations, as well as a review of federal, state, and local environmental databases, none of the adjoining properties appeared to have significantly environmentally impacted the subject property at this time.

A. ADJOINING PROPERTIES MATERIALS STORAGE

Visual observations of the portions of the adjoining properties visible from the subject property or public roadways did not indicate the exterior storage of hazardous materials or wastes. No indications of spillage or staining were observed in the observable exterior areas of these sites. Additionally, no obvious indications of improper hazardous material storage or unusual or suspicious materials handling or storage practices were observed.

B. ADJOINING PROPERTIES WASTESTREAM DISPOSAL

No unusual or suspicious waste stream disposal activities were observed on the portions of the adjoining properties visible from the subject property or public roadways.

C. RECOMMENDATIONS

Based on the results of this Phase I, no further investigation is recommended for this Site.

SECTION X.
STATEMENT OF THE ENVIRONMENTAL PROFESSIONALS

This Assessment has been performed for the exclusive use and benefit of the addressee(s) identified on the cover of this report, or agents directly specified by it (them), for the transaction at issue concerning the subject property described in this report. This Assessment shall not be used or relied upon by others without the prior written consent of Earth-Strata, Inc. and of the addressee(s) named on the cover of this report.

STATEMENT OF QUALITY ASSURANCE

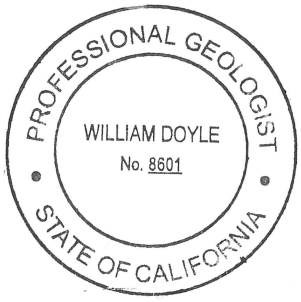
I declare that, to the best of my professional knowledge and belief, I meet the definition of an Environmental Professional as defined in § 312.10 of 40 CFR 312 and 12.13.2. I have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. I have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312. The conclusions contained within this Assessment are based upon site conditions I readily observed and were reasonably ascertainable and present at the time of the site visit. The findings and conclusions represent my best professional opinion and judgment. In addition, the conclusions and recommendations stated in this report are based upon personal observations made by E-S and upon information provided by others. I have no reason to suspect or believe that the information provided is inaccurate.

STATEMENT OF QUALITY CONTROL

The objective of this Phase I ESA was to ascertain the potential presence or absence of RECs that could impact the subject property, as delineated in the scope of services and limitations identified in this report and in the service agreement. The procedure was to perform reasonable steps in accordance with the existing regulations, currently available technology, and generally accepted environmental consulting practices, in order to accomplish the stated objective.

Signature of Professional Geologist – *William T. Doyle, #8601*

Signature/Environmental Assessor



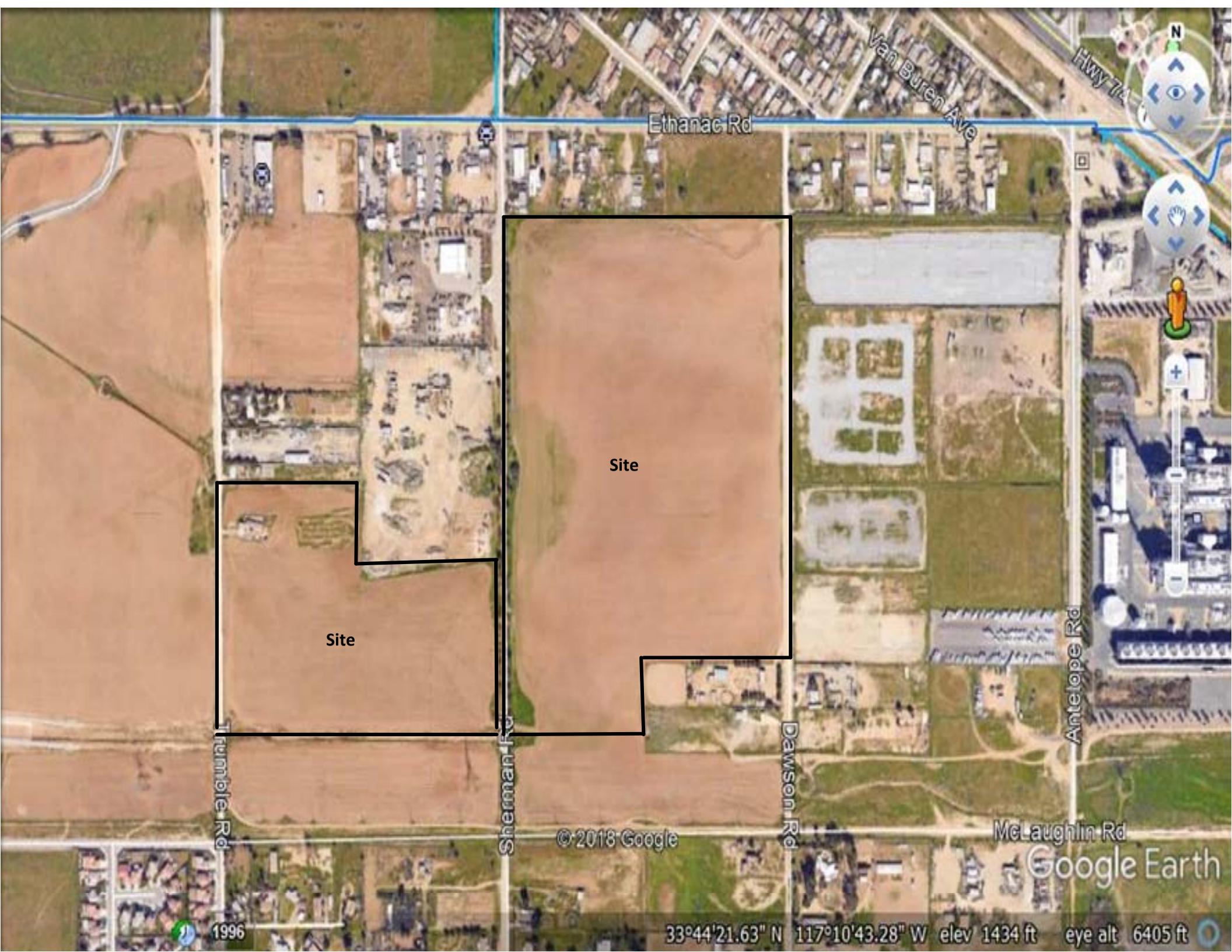
Acronyms and Abbreviations

Below are several abbreviations that E-S uses to describe various projects.

ACM	Asbestos-containing material
AQMD	Air Quality Management District
AST	aboveground storage tank
ASTM	American Society for Testing and Materials
bgs	Below Ground Surface
BTEX	Benzene-toluene-ethylbenzene-xylene
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act of 1980
CERCLIS	Comprehensive Environmental Response, Compensation and Liability Information System
CFR	Code of Federal Regulations
CHMIRS	California Hazardous Material Incident Report System
COC's	Chemicals of Concern
CDL	Clandestine Drug Labs
DEP	Department of Environmental Protection
DOD	Department of Defense
DOE	Department of Energy
DTSC	Department of Toxic Substance Control
EDR	Environmental Data Resources, Inc.
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
FINDS	Facility Index System
FUDS	Formerly Used Defense Sites
HMIRS	Hazardous Materials Information Reporting System
ICIS	Integrated Compliance Information System
LBP	Lead Based Paint
LDL	Laboratory Detection Limit
LEL	Lower Explosion Limit
LUCIS	Land Use Control Information System
LUST	leaking underground storage tank
MCL	Maximum Contaminant Level
MLTS	Material License Tracking System
mg/L	Milligrams per liter
MSDS	Material Safety Data Sheet
MTBE	Methyl Tertiary Butyl Ether
NFA	No Further Action
NPL	National Priority List
ODI	Open Dump Inventory
PADS	PCB Activity Database System
PCB	Poly Chlorinated Biphenyl
PEL	Permissible Exposure Limit
Ppb	Parts per billion
RAP	Remedial Action Plan
RCRA	Resource Conservation and Recovery Act
REC	Recognized environmental condition
RWQCB	Regional Water Quality Control Board
SVE	Soil Vapor Extraction
Ug/L	Micrograms per Liter
UST	Underground storage tank
VOC	Volatile Organic Compound

APPENDIX

A


Ethanac Rd
Van Buren Ave
Hwy 74
Site
Site
Trumble Rd
Sherman Rd
Dawson Rd
Antelope Rd
McLaughlin Rd
© 2018 Google
Google Earth
1996
33°44'21.63" N 117°10'43.28" W elev 1434 ft eye alt 6405 ft

Site Photograph's



View of 26340 Trumble Road small manufactured home and garage.



Another view of 26340 Trumble Road small manufactured home and garage.



View of RVC flood Control channel.



View of tilled field adjacent to residential property and gravel sand mine looking northeast.



View of tilled field between Sherman and Dawson Road looking northeast.



View of adjacent property sand and gravel mine on Sherman Road



View of between Sherman and Dawson Road looking north.



View of property east of Sherman road adjacent to horse corral.



View of horse property adjacent to Sherman Road and flood control channel looking east.



View of property adjacent to Sherman road looking southeast

APPENDIX

B

Motte Rancon Distribution Center

26340 Trumble Road

ROMOLAND, CA 92585

Inquiry Number: 5269785.5

April 24, 2018

The EDR Aerial Photo Decade Package

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Aerial Photo Decade Package

04/24/18

Site Name:

Motte Rancon Distribution Cen
26340 Trumble Road
ROMOLAND, CA 92585
EDR Inquiry # 5269785.5

Client Name:

Rainwater Consulting
24051 Golden Pheasant Lane
Murrieta, CA 92562
Contact: Tim Doyle

Environmental Data Resources, Inc. (EDR) Aerial Photo Decade Package is a screening tool designed to assist environmental professionals in evaluating potential liability on a target property resulting from past activities. EDR's professional researchers provide digitally reproduced historical aerial photographs, and when available, provide one photo per decade.

Search Results:

Year	*Scale*	*Details*	*Source*
2014	1"=500'	Flight Year: 2014	USDA/NAIP
2010	1"=500'	Flight Year: 2010	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2002	1"=500'	Acquisition Date: June 06, 2002	USGS/DOQQ
1997	1"=500'	Flight Date: October 16, 1997	USGS
1989	1"=500'	Flight Date: August 15, 1989	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1978	1"=500'	Flight Date: September 20, 1978	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1961	1"=500'	Flight Date: August 18, 1961	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1949	1"=500'	Flight Date: May 23, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

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INQUIRY #: 5269785.5

YEAR: 2014

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 2010

= 500'

N

EDR


INQUIRY #: 5269785.5
YEAR: 2006
= 500'
N
EDR



INQUIRY #: 5269785.5

YEAR: 2002

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1997

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1989

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1985

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1978

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1967

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1961

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1953

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1949

= 500'

N

EDR



INQUIRY #: 5269785.5

YEAR: 1938

= 500'

N

EDR

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

ROMOLAND QUADRANGLE
CALIFORNIA-RIVERSIDE CO.
7.5 MINUTE SERIES (TOPOGRAPHIC)

2551 IV SE (STEELE PEAK)

2551 I SE (LAKEVIEW)

117°15′ 477000m E. R. 4 W. R. 3 W. 479 PERRIS 2.5 MI. 480 12′30″ 481 RIVERSIDE 21 MI. PERRIS 3.8 MI. 2551 I SW (PERRIS) SAN BERNARDINO 32 MI. 484 10′ 485 486 R. 3 W. 1730 000 FEET R. 2 W. 488 117°07′30″

33°45′ 3734000m N.

PERRIS VALLEY

Romoland

Menifee

Sun City

Quail Valley Country Club

Railroad Canyon Res

Bell Mtn

Menifee-Antelope Community Hall

Leon Mine

Trailer Park

Golf Course

Gravel Pit

Reservoir

Windmill

Well

BM 1433

BM 1479

BM 1501

BM 1440

BM 1585

ATCHISON TOPEKA AND SANTA FE

GOETZ ROAD

MURRIETA ROAD

MENIFEE ROAD

BRIGGS ROAD

LINDENBERGER ROAD

GRAND AVE

SIMPSON ROAD

NEWPORT ROAD

HOLLAND RD

BRADLEY ROAD

BUNDY CANYON ROAD

SCOTT ROAD

PIPE LINE

CONSTRUCTION

Ditch

San Jacinto River

Railroad Canyon

Cottonwood Canyon

Bundy Canyon

Double Butte

570 000 FEET

T. 5 S.

T. 6 S.

42′30″

40′

HEMET (JUNC. CALIF. 79) 9.2 MI.

WINCHESTER 2.4 MI.
HEMET 12 MI.

2551 III NE (LAKE ELSINORE)

2551 III NE (WINCHESTER)

ELSINORE 6.6 MI.
SEDCO HILLS (CALIF. 71) 2.3 MI.

TEMECULA 9.3 MI.
ESCONDIDO 36 MI.

(MURRIETA) 2551 II SW

(WILDOMAR) 2551 III SE

(BACHELOR MTN.) 2551 II SE

33°37′30″ 117°15′ 477 R. 4 W. R. 3 W. 1 700 000 FEET 479 480 12′30″ 481 482 483 10′ 485 R. 3 W. R. 2 W. 488000m E. 117°07′30″

Mapped, edited, and published by the Geological Survey

Control by USGS and USC&GS

Topography from aerial photographs by multiplex methods and by plane-table surveys 1953. Aerial photographs taken 1951

Polyconic projection. 1927 North American datum
10,000-foot grid based on California coordinate system, zone 6

Unchecked elevations are shown in brown

1000-meter Universal Transverse Mercator grid ticks, zone 11, shown in blue

To place on the predicted North American Datum 1983 move the projection lines 82 meters east as shown by dashed corner ticks

GN MN 0°06′ 2 MILS 14½° 258 MILS

UTM GRID AND 1979 MAGNETIC NORTH DECLINATION AT CENTER OF SHEET

SCALE 1:24000

1 0 1 MILE

1000 0 1000 2000 3000 4000 5000 6000 7000 FEET

1 5 0 1 KILOMETER

CONTOUR INTERVAL 20 FEET
DOTTED LINES REPRESENT HALF-INTERVAL CONTOURS
NATIONAL GEODETIC VERTICAL DATUM OF 1929

THIS MAP COMPLIES WITH NATIONAL MAP ACCURACY STANDARDS
FOR SALE BY U. S. GEOLOGICAL SURVEY, DENVER, COLORADO 80225, OR RESTON, VIRGINIA 22092
A FOLDER DESCRIBING TOPOGRAPHIC MAPS AND SYMBOLS IS AVAILABLE ON REQUEST

CALIF

QUADRANGLE LOCATION

Revisions shown in purple and woodland compiled from aerial photographs taken 1976 and other source data
This information not field checked. Map edited 1979

Purple tint indicates extension of urban areas

ROAD CLASSIFICATION

Primary highway, all weather, hard surface
Secondary highway, all weather, hard surface
Light-duty road, all weather, improved surface
Unimproved road, fair or dry weather
Interstate Route U. S. Route State Route

ROMOLAND, CALIF.

N3337.5—W11707.5/7.5

1953
PHOTOREVISED 1979
DMA 2551 II NW—SERIES V895

INTERIOR—GEOLOGICAL SURVEY, RESTON, VIRGINIA—1985

APPENDIX

C

Motte Rancon Distribution Center
26340 Trumble Road
ROMOLAND, CA 92585

Inquiry Number: 5269785.2s
April 24, 2018

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
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Thank you for your business.
Please contact EDR at 1-800-352-0050
with any questions or comments.

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EXECUTIVE SUMMARY

A search of available environmental records was conducted by Environmental Data Resources, Inc (EDR). The report was designed to assist parties seeking to meet the search requirements of EPA's Standards and Practices for All Appropriate Inquiries (40 CFR Part 312), the ASTM Standard Practice for Environmental Site Assessments (E 1527-13), the ASTM Standard Practice for Environmental Site Assessments for Forestland or Rural Property (E 2247-16), the ASTM Standard Practice for Limited Environmental Due Diligence: Transaction Screen Process (E 1528-14) or custom requirements developed for the evaluation of environmental risk associated with a parcel of real estate.

TARGET PROPERTY INFORMATION

ADDRESS

26340 TRUMBLE ROAD
ROMOLAND, CA 92585

COORDINATES

Latitude (North):	33.7388990 - 33° 44' 20.03''
Longitude (West):	117.1836790 - 117° 11' 1.24''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	482985.5
UTM Y (Meters):	3733027.8
Elevation:	1431 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	5641314 ROMOLAND, CA
Version Date:	2012
North Map:	5641330 PERRIS, CA
Version Date:	2012

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603, 20140530
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
26340 TRUMBLE ROAD
ROMOLAND, CA 92585

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	NORTH COUNTY SAND &		US MINES	Higher	858, 0.162, NE
A2	NORTH COUNTY SAND &		US MINES	Higher	859, 0.163, NE
A3	NORTH COUNTY SAND &		US MINES	Higher	859, 0.163, NE
A4	NORTH COUNTY SAND &		US MINES	Higher	859, 0.163, NE
B5	FAB-TECH 17	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
B6	FAB-TECH 49	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
B7	FAB-TECH 18	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
B8	FAB-TECH 45	26227 SHERMAN RD	ABANDONED MINES	Higher	1105, 0.209, NE
C9	CHANEY'S AUTO	27411 ETHANAC ROAD	LUST, HIST CORTESE	Higher	1429, 0.271, NNE
C10	CHANEY'S AUTOMOTIVE	27411 ETHANAC ROAD	LUST	Higher	1429, 0.271, NNE
11	NEILL #39;S RECYCLIN	26026 SHERMAN RD	SWRCY, NPDES	Higher	1663, 0.315, NE
12	THE CLUB K-8 SCHOOL	EVANS ROAD/NOVA LANE	ENVIROSTOR, SCH	Lower	4596, 0.870, WSW

EXECUTIVE SUMMARY

TARGET PROPERTY SEARCH RESULTS

The target property was not listed in any of the databases searched by EDR.

DATABASES WITH NO MAPPED SITES

No mapped sites were found in EDR's search of available ("reasonably ascertainable ") government records either on the target property or within the search radius around the target property for the following databases:

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL ---------- National Priority List
Proposed NPL ---------- Proposed National Priority List Sites
NPL LIENS ---------- Federal Superfund Liens

Federal Delisted NPL site list

Delisted NPL ---------- National Priority List Deletions

Federal CERCLIS list

FEDERAL FACILITY ---------- Federal Facility Site Information listing
SEMS ---------- Superfund Enterprise Management System

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE ---------- Superfund Enterprise Management System Archive

Federal RCRA CORRACTS facilities list

CORRACTS ---------- Corrective Action Report

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF ---------- RCRA - Treatment, Storage and Disposal

Federal RCRA generators list

RCRA-LQG ---------- RCRA - Large Quantity Generators
RCRA-SQG ---------- RCRA - Small Quantity Generators
RCRA-CESQG ---------- RCRA - Conditionally Exempt Small Quantity Generator

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System
US ENG CONTROLS ---------- Engineering Controls Sites List

US INST CONTROL ---------- Sites with Institutional Controls

Federal ERNS list

ERNS ---------- Emergency Response Notification System

State- and tribal - equivalent NPL

RESPONSE ---------- State Response Sites

State and tribal landfill and/or solid waste disposal site lists

SWF/LF ---------- Solid Waste Information System

State and tribal leaking storage tank lists

INDIAN LUST ---------- Leaking Underground Storage Tanks on Indian Land
SLIC ---------- Statewide SLIC Cases

State and tribal registered storage tank lists

FEMA UST ---------- Underground Storage Tank Listing
UST ---------- Active UST Facilities
AST ---------- Aboveground Petroleum Storage Tank Facilities
INDIAN UST ---------- Underground Storage Tanks on Indian Land

State and tribal voluntary cleanup sites

INDIAN VCP ---------- Voluntary Cleanup Priority Listing
VCP ---------- Voluntary Cleanup Program Properties

State and tribal Brownfields sites

BROWNFIELDS ---------- Considered Brownfieds Sites Listing

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS ---------- A Listing of Brownfields Sites

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT ---------- Waste Management Unit Database
HAULERS ---------- Registered Waste Tire Haulers Listing
INDIAN ODI ---------- Report on the Status of Open Dumps on Indian Lands
DEBRIS REGION 9 ---------- Torres Martinez Reservation Illegal Dump Site Locations
ODI ---------- Open Dump Inventory
IHS OPEN DUMPS ---------- Open Dumps on Indian Land

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL ---------- Delisted National Clandestine Laboratory Register
HIST Cal-Sites ---------- Historical Calsites Database

SCH ..... School Property Evaluation Program
CDL ..... Clandestine Drug Labs
Toxic Pits ..... Toxic Pits Cleanup Act Sites
US CDL ..... National Clandestine Laboratory Register

Local Lists of Registered Storage Tanks

SWEEPS UST ..... SWEEPS UST Listing
HIST UST ..... Hazardous Substance Storage Container Database
CA FID UST ..... Facility Inventory Database

Local Land Records

LIENS ..... Environmental Liens Listing
LIENS 2 ..... CERCLA Lien Information
DEED ..... Deed Restriction Listing

Records of Emergency Release Reports

HMIRS ..... Hazardous Materials Information Reporting System
CHMIRS ..... California Hazardous Material Incident Report System
LDS ..... Land Disposal Sites Listing
MCS ..... Military Cleanup Sites Listing
SPILLS 90 ..... SPILLS 90 data from FirstSearch

Other Ascertainable Records

RCRA NonGen / NLR ..... RCRA - Non Generators / No Longer Regulated
FUDS ..... Formerly Used Defense Sites
DOD ..... Department of Defense Sites
SCRD DRYCLEANERS ..... State Coalition for Remediation of Drycleaners Listing
US FIN ASSUR ..... Financial Assurance Information
EPA WATCH LIST ..... EPA WATCH LIST
2020 COR ACTION ..... 2020 Corrective Action Program List
TSCA ..... Toxic Substances Control Act
TRIS ..... Toxic Chemical Release Inventory System
SSTS ..... Section 7 Tracking Systems
ROD ..... Records Of Decision
RMP ..... Risk Management Plans
RAATS ..... RCRA Administrative Action Tracking System
PRP ..... Potentially Responsible Parties
PADS ..... PCB Activity Database System
ICIS ..... Integrated Compliance Information System
FTTS ..... FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
MLTS ..... Material Licensing Tracking System
COAL ASH DOE ..... Steam-Electric Plant Operation Data
COAL ASH EPA ..... Coal Combustion Residues Surface Impoundments List
PCB TRANSFORMER ..... PCB Transformer Registration Database
RADINFO ..... Radiation Information Database
HIST FTTS ..... FIFRA/TSCA Tracking System Administrative Case Listing
DOT OPS ..... Incident and Accident Data
CONSENT ..... Superfund (CERCLA) Consent Decrees
INDIAN RESERV ..... Indian Reservations
FUSRAP ..... Formerly Utilized Sites Remedial Action Program

UMTRA ---- Uranium Mill Tailings Sites
LEAD SMELTERS ---- Lead Smelter Sites
US AIRS ---- Aerometric Information Retrieval System Facility Subsystem
FINDS ---- Facility Index System/Facility Registry System
UXO ---- Unexploded Ordnance Sites
ECHO ---- Enforcement & Compliance History Information
DOCKET HWC ---- Hazardous Waste Compliance Docket Listing
FUELS PROGRAM ---- EPA Fuels Program Registered Listing
CA BOND EXP. PLAN ---- Bond Expenditure Plan
Cortese ---- "Cortese" Hazardous Waste & Substances Sites List
CUPA Listings ---- CUPA Resources List
DRYCLEANERS ---- Cleaner Facilities
EMI ---- Emissions Inventory Data
ENF ---- Enforcement Action Listing
Financial Assurance ---- Financial Assurance Information Listing
HAZNET ---- Facility and Manifest Data
ICE ---- ICE
HWP ---- EnviroStor Permitted Facilities Listing
HWT ---- Registered Hazardous Waste Transporter Database
MINES ---- Mines Site Location Listing
MWMP ---- Medical Waste Management Program Listing
NPDES ---- NPDES Permits Listing
PEST LIC ---- Pesticide Regulation Licenses Listing
PROC ---- Certified Processors Database
Notify 65 ---- Proposition 65 Records
UIC ---- UIC Listing
WASTEWATER PITS ---- Oil Wastewater Pits Listing
WDS ---- Waste Discharge System
WIP ---- Well Investigation Program Case List

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP ---- EDR Proprietary Manufactured Gas Plants
EDR Hist Auto ---- EDR Exclusive Historical Auto Stations
EDR Hist Cleaner ---- EDR Exclusive Historical Cleaners

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF ---- Recovered Government Archive Solid Waste Facilities List
RGA LUST ---- Recovered Government Archive Leaking Underground Storage Tank

SURROUNDING SITES: SEARCH RESULTS

Surrounding sites were identified in the following databases.

Elevations have been determined from the USGS Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified. Sites with an elevation equal to or higher than the target property have been differentiated below from sites with an elevation lower than the target property.
Page numbers and map identification numbers refer to the EDR Radius Map report where detailed data on individual sites can be reviewed.

Sites listed in ***bold italics*** are in multiple databases.

Unmappable (orphan) sites are not considered in the foregoing analysis.

EXECUTIVE SUMMARY

STANDARD ENVIRONMENTAL RECORDS

State- and tribal - equivalent CERCLIS

ENVIROSTOR: The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

A review of the ENVIROSTOR list, as provided by EDR, and dated 01/30/2018 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
THE CLUB K-8 SCHOOL	***EVANS ROAD/NOVA LANE***	***WSW 1/2 - 1 (0.870 mi.)***	***12***	***35***
Facility Id: 33010067				
Status: No Further Action				

State and tribal leaking storage tank lists

LUST: Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

A review of the LUST list, as provided by EDR, has revealed that there are 2 LUST sites within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CHANEY'S AUTO	***27411 ETHANAC ROAD***	***NNE 1/4 - 1/2 (0.271 mi.)***	***C9***	***28***
Database: LUST REG 8, Date of Government Version: 02/14/2005				
Facility Status: Preliminary site assessment underway				
Global ID: T0606500332				
CHANEY'S AUTOMOTIVE	27411 ETHANAC ROAD	NNE 1/4 - 1/2 (0.271 mi.)	C10	30
Database: RIVERSIDE CO. LUST, Date of Government Version: 01/18/2018				
Database: LUST, Date of Government Version: 03/12/2018				
Status: Completed - Case Closed				
Facility Id: 93620				
Global Id: T0606500332				
Facility Status: 9				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Landfill / Solid Waste Disposal Sites

SWRCY: A listing of recycling facilities in California.

A review of the SWRCY list, as provided by EDR, and dated 12/11/2017 has revealed that there is 1 SWRCY site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NEILL #39;S RECYCLIN Cert Id: RC137839.001	***26026 SHERMAN RD***	***NE 1/4 - 1/2 (0.315 mi.)***	***11***	***31***

Other Ascertainable Records

US MINES: Mines Master Index File. The source of this database is the Dept. of Labor, Mine Safety and Health Administration.

A review of the US MINES list, as provided by EDR, has revealed that there are 4 US MINES sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.162 mi.)	A1	8
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.163 mi.)	A2	14
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.163 mi.)	A3	20
NORTH COUNTY SAND & Database: US MINES, Date of Government Version: 10/29/2017		NE 1/8 - 1/4 (0.163 mi.)	A4	26

ABANDONED MINES: An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

A review of the ABANDONED MINES list, as provided by EDR, and dated 12/20/2017 has revealed that there are 4 ABANDONED MINES sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
FAB-TECH 17	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B5	26
FAB-TECH 49	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B6	27
FAB-TECH 18	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B7	27
FAB-TECH 45	26227 SHERMAN RD	NE 1/8 - 1/4 (0.209 mi.)	B8	28

EXECUTIVE SUMMARY

HIST CORTESE: The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

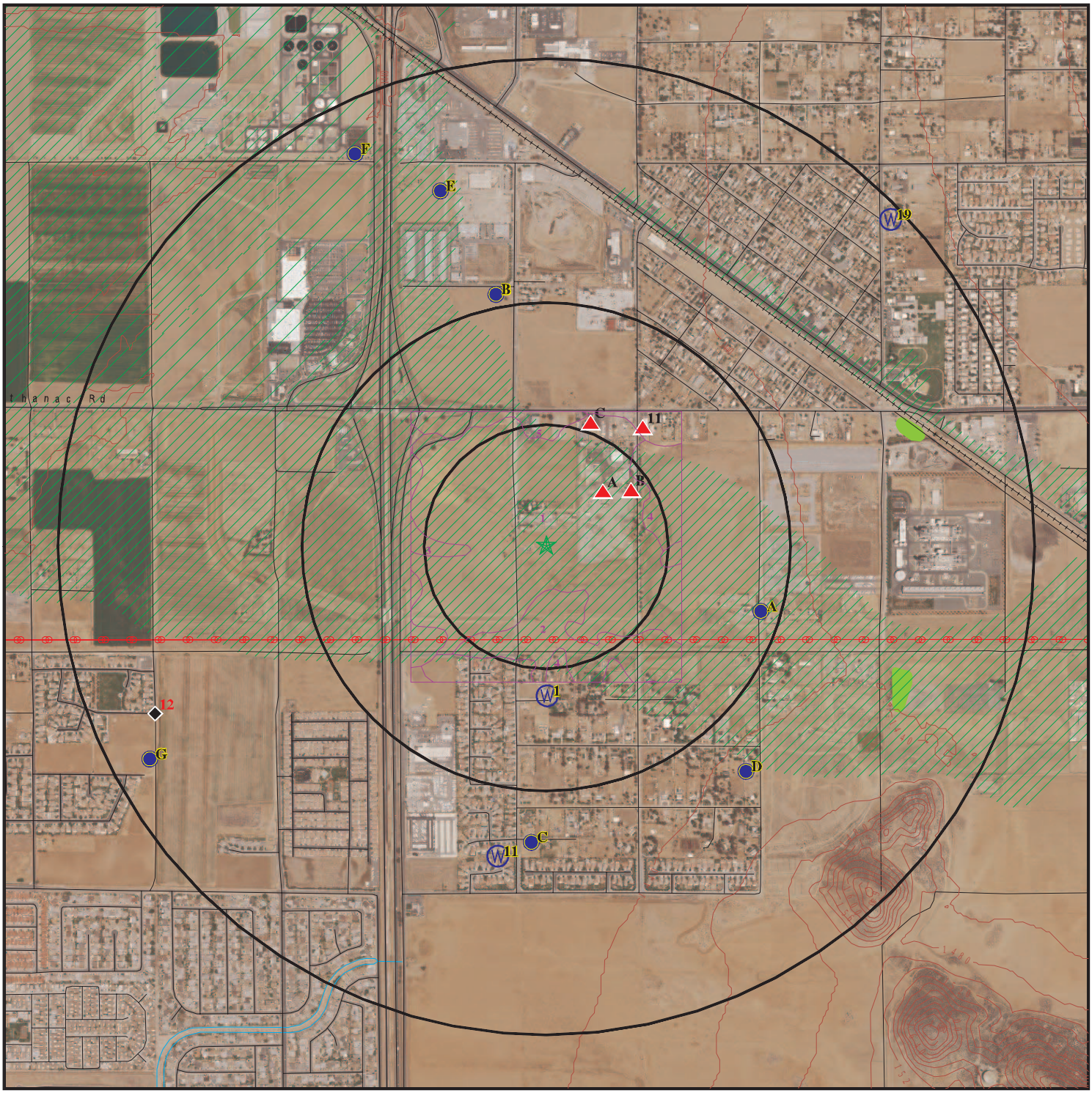
A review of the HIST CORTESE list, as provided by EDR, and dated 04/01/2001 has revealed that there is 1 HIST CORTESE site within approximately 0.5 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
CHANEY'S AUTO Reg Id: 083302297T	***27411 ETHANAC ROAD***	***NNE 1/4 - 1/2 (0.271 mi.)***	***C9***	***28***

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 5269785.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites

0 1/4 1/2 1 Miles

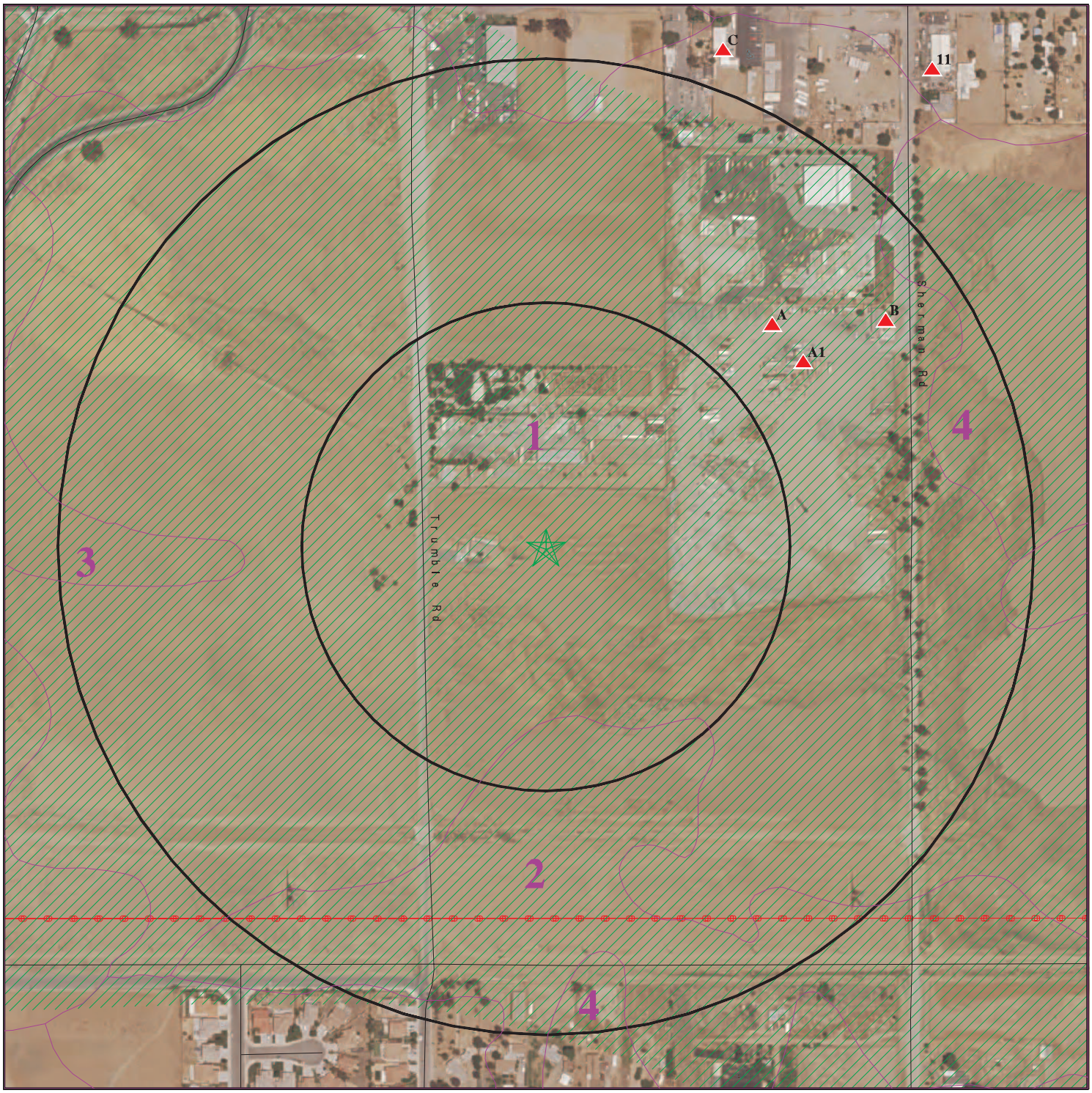
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- National Wetland Inventory
- State Wetlands
- Upgradient Area
- Areas of Concern

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
		INQUIRY #:	5269785.2s
LAT/LONG:	33.738899 / 117.183679	DATE:	April 24, 2018 1:27 pm

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DETAIL MAP - 5269785.2S



- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- Sensitive Receptors
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- 100-year flood zone
- 500-year flood zone
- Areas of Concern

0 1/16 1/8 1/4 Miles

N

This report includes Interactive Map Layers to display and/or hide map information. The legend includes only those icons for the default map view.

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
		INQUIRY #:	5269785.2s
LAT/LONG:	33.738899 / 117.183679	DATE:	April 24, 2018 1:30 pm

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MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
STANDARD ENVIRONMENTAL RECORDS								
Federal NPL site list								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	TP		NR	NR	NR	NR	NR	0
Federal Delisted NPL site list								
Delisted NPL	1.000		0	0	0	0	NR	0
Federal CERCLIS list								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Federal CERCLIS NFRAP site list								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Federal RCRA CORRACTS facilities list								
CORRACTS	1.000		0	0	0	0	NR	0
Federal RCRA non-CORRACTS TSD facilities list								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Federal RCRA generators list								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-CESQG	0.250		0	0	NR	NR	NR	0
Federal institutional controls / engineering controls registries								
LUCIS	0.500		0	0	0	NR	NR	0
US ENG CONTROLS	0.500		0	0	0	NR	NR	0
US INST CONTROL	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	TP		NR	NR	NR	NR	NR	0
State- and tribal - equivalent NPL								
RESPONSE	1.000		0	0	0	0	NR	0
State- and tribal - equivalent CERCLIS								
ENVIROSTOR	1.000		0	0	0	1	NR	1
State and tribal landfill and/or solid waste disposal site lists								
SWF/LF	0.500		0	0	0	NR	NR	0
State and tribal leaking storage tank lists								
LUST	0.500		0	0	2	NR	NR	2

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
INDIAN LUST	0.500		0	0	0	NR	NR	0
SLIC	0.500		0	0	0	NR	NR	0
State and tribal registered storage tank lists								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		0	0	NR	NR	NR	0
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
State and tribal voluntary cleanup sites								
INDIAN VCP	0.500		0	0	0	NR	NR	0
VCP	0.500		0	0	0	NR	NR	0
State and tribal Brownfields sites								
BROWNFIELDS	0.500		0	0	0	NR	NR	0
ADDITIONAL ENVIRONMENTAL RECORDS								
Local Brownfield lists								
US BROWNFIELDS	0.500		0	0	0	NR	NR	0
Local Lists of Landfill / Solid Waste Disposal Sites								
WMUDS/SWAT	0.500		0	0	0	NR	NR	0
SWRCY	0.500		0	0	1	NR	NR	1
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
IHS OPEN DUMPS	0.500		0	0	0	NR	NR	0
Local Lists of Hazardous waste / Contaminated Sites								
US HIST CDL	TP		NR	NR	NR	NR	NR	0
HIST Cal-Sites	1.000		0	0	0	0	NR	0
SCH	0.250		0	0	NR	NR	NR	0
CDL	TP		NR	NR	NR	NR	NR	0
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
Local Lists of Registered Storage Tanks								
SWEEPS UST	0.250		0	0	NR	NR	NR	0
HIST UST	0.250		0	0	NR	NR	NR	0
CA FID UST	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	TP		NR	NR	NR	NR	NR	0
LIENS 2	TP		NR	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
CHMIRS	TP		NR	NR	NR	NR	NR	0
LDS	TP		NR	NR	NR	NR	NR	0
MCS	TP		NR	NR	NR	NR	NR	0
SPILLS 90	TP		NR	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	0	NR	NR	NR	0
FUDS	1.000		0	0	0	0	NR	0
DOD	1.000		0	0	0	0	NR	0
SCRD DRYCLEANERS	0.500		0	0	0	NR	NR	0
US FIN ASSUR	TP		NR	NR	NR	NR	NR	0
EPA WATCH LIST	TP		NR	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	TP		NR	NR	NR	NR	NR	0
TRIS	TP		NR	NR	NR	NR	NR	0
SSTS	TP		NR	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	TP		NR	NR	NR	NR	NR	0
RAATS	TP		NR	NR	NR	NR	NR	0
PRP	TP		NR	NR	NR	NR	NR	0
PADS	TP		NR	NR	NR	NR	NR	0
ICIS	TP		NR	NR	NR	NR	NR	0
FTTS	TP		NR	NR	NR	NR	NR	0
MLTS	TP		NR	NR	NR	NR	NR	0
COAL ASH DOE	TP		NR	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	TP		NR	NR	NR	NR	NR	0
RADINFO	TP		NR	NR	NR	NR	NR	0
HIST FTTS	TP		NR	NR	NR	NR	NR	0
DOT OPS	TP		NR	NR	NR	NR	NR	0
CONSENT	1.000		0	0	0	0	NR	0
INDIAN RESERV	1.000		0	0	0	0	NR	0
FUSRAP	1.000		0	0	0	0	NR	0
UMTRA	0.500		0	0	0	NR	NR	0
LEAD SMELTERS	TP		NR	NR	NR	NR	NR	0
US AIRS	TP		NR	NR	NR	NR	NR	0
US MINES	0.250		0	4	NR	NR	NR	4
ABANDONED MINES	0.250		0	4	NR	NR	NR	4
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
ECHO	TP		NR	NR	NR	NR	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
FUELS PROGRAM	0.250		0	0	NR	NR	NR	0
CA BOND EXP. PLAN	1.000		0	0	0	0	NR	0
Cortese	0.500		0	0	0	NR	NR	0
CUPA Listings	0.250		0	0	NR	NR	NR	0
DRYCLEANERS	0.250		0	0	NR	NR	NR	0
EMI	TP		NR	NR	NR	NR	NR	0
ENF	TP		NR	NR	NR	NR	NR	0
Financial Assurance	TP		NR	NR	NR	NR	NR	0
HAZNET	TP		NR	NR	NR	NR	NR	0

MAP FINDINGS SUMMARY

Database	Search Distance (Miles)	Target Property	< 1/8	1/8 - 1/4	1/4 - 1/2	1/2 - 1	> 1	Total Plotted
ICE	TP		NR	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	1	NR	NR	1
HWP	1.000		0	0	0	0	NR	0
HWT	0.250		0	0	NR	NR	NR	0
MINES	0.250		0	0	NR	NR	NR	0
MWMP	0.250		0	0	NR	NR	NR	0
NPDES	TP		NR	NR	NR	NR	NR	0
PEST LIC	TP		NR	NR	NR	NR	NR	0
PROC	0.500		0	0	0	NR	NR	0
Notify 65	1.000		0	0	0	0	NR	0
UIC	TP		NR	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	TP		NR	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
EDR HIGH RISK HISTORICAL RECORDS								
EDR Exclusive Records								
EDR MGP	1.000		0	0	0	0	NR	0
EDR Hist Auto	0.125		0	NR	NR	NR	NR	0
EDR Hist Cleaner	0.125		0	NR	NR	NR	NR	0
EDR RECOVERED GOVERNMENT ARCHIVES								
Exclusive Recovered Govt. Archives								
RGA LF	TP		NR	NR	NR	NR	NR	0
RGA LUST	TP		NR	NR	NR	NR	NR	0
- Totals --		0	0	8	4	1	0	13

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1
NE
1/8-1/4
0.162 mi.
858 ft.

NORTH COUNTY SAND & GRAVEL INC
RIVERSIDE (County), CA
Site 1 of 4 in cluster A

US MINES **1016469061**
N/A

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0405517
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	FAB-TECH 17
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	4
Status date:	20120702
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	33 44 25
Longitude:	117 10 53

Violations Details:

Violation Number:	6440074
Date Issued:	11/03/2008
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	11/04/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2008

Violation Number:	8560322
Date Issued:	10/29/2010
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	11/03/2010
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2010

Violation Number:	8560323
Date Issued:	10/29/2010
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	11/02/2010
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162.00

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Paid Penalty: 162.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 162.00
Year: 2010

Violation Number: 8560324
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 11/03/2010
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2010

Violation Number: 8560325
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 11/02/2010
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 807.00
Paid Penalty: 807.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 807.00
Year: 2010

Violation Number: 8560326
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 11/02/2010
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2010

Violation Number: 8560327
Date Issued: 10/29/2010
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 10/29/2010

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2010

Violation Number:	6485336
Date Issued:	09/25/2009
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	09/25/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

Violation Number:	6485334
Date Issued:	09/24/2009
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	09/24/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

Violation Number:	6485335
Date Issued:	09/24/2009
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(a)
Date Abated:	10/01/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

Violation Number:	6485333
Date Issued:	09/24/2009
Mine Status:	Abandoned

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 10/01/2009
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 362.00
Paid Penalty: 362.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 362.00
Year: 2009

Violation Number: 6485332
Date Issued: 09/24/2009
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 10/01/2009
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 8560400
Date Issued: 07/06/2011
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 07/11/2011
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2011

Violation Number: 7980691
Date Issued: 05/04/2009
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 05/05/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Violation Number: 8560384
Date Issued: 05/02/2011
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 05/03/2011
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2011

Violation Number: 6339848
Date Issued: 04/15/2002
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 04/15/2002
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 55.00
Paid Penalty: 55.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 55.00
Year: 2002

Violation Number: 6339849
Date Issued: 04/15/2002
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(a)
Date Abated: 04/16/2002
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 55.00
Paid Penalty: 55.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 55.00
Year: 2002

Violation Number: 6339850
Date Issued: 04/15/2002
Mine Status: Abandoned
Status Date: 07/02/2012
Action Type: 104(g)(1)
Date Abated: 04/17/2002
Citation/Order: Order
Sig and Sub Designation: Y
Proposed Penalty: 231.00
Paid Penalty: 231.00
Assessment Status code: Closed
Assess. Case Status code: Proposed

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Assessment Amount:	231.00
Year:	2002
Violation Number:	6339841
Date Issued:	04/04/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(d)(1)
Date Abated:	04/15/2002
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	800.00
Paid Penalty:	800.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	800.00
Year:	2002
Violation Number:	6339842
Date Issued:	04/04/2002
Mine Status:	Abandoned
Status Date:	07/02/2012
Action Type:	104(d)(1)
Date Abated:	04/15/2002
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	800.00
Paid Penalty:	800.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	800.00
Year:	2002

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469061**

Click this hyperlink while viewing on your computer to access
30 additional US_MINES: record(s) in the EDR Site Report.

A2 **NORTH COUNTY SAND & GRAVEL INC** **US MINES** **1016469062**
NE **N/A**
1/8-1/4 **RIVERSIDE (County), CA**
0.163 mi.
859 ft. **Site 2 of 4 in cluster A**

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0405518
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	FAB-TECH 18
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	4
Status date:	20170104
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	33 44 26
Longitude:	117 10 54

Violations Details:

Violation Number:	7992986
Date Issued:	12/17/2007
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(g)(1)
Date Abated:	12/18/2007
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	971.00
Paid Penalty:	971.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	971.00
Year:	2007

Violation Number:	7992987
Date Issued:	12/17/2007
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	01/28/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	176.00
Paid Penalty:	176.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	176.00
Year:	2007

Violation Number:	7992985
Date Issued:	12/17/2007
Mine Status:	Active
Status Date:	12/02/2014

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Action Type:	104(a)
Date Abated:	12/17/2007
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2007

Violation Number:	8874752
Date Issued:	11/29/2016
Mine Status:	Abandoned
Status Date:	01/04/2017
Action Type:	104(a)
Date Abated:	11/29/2016
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	114.00
Paid Penalty:	114.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	114.00
Year:	2016

Violation Number:	6354144
Date Issued:	11/05/2003
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(g)(1)
Date Abated:	11/06/2003
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	324
Paid Penalty:	324
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	324
Year:	2003

Violation Number:	8788706
Date Issued:	10/14/2015
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	10/15/2015
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2015

Violation Number:	8788705

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Date Issued:	10/14/2015
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	10/15/2015
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2015

Violation Number:	8788704
Date Issued:	10/14/2015
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	10/15/2015
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162.00
Paid Penalty:	162.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	162.00
Year:	2015

Violation Number:	8689874
Date Issued:	09/18/2013
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/19/2013
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162
Paid Penalty:	162
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	162
Year:	2013

Violation Number:	8689876
Date Issued:	09/18/2013
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/18/2013
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	162
Paid Penalty:	162
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	162

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Year:	2013
Violation Number:	8689875
Date Issued:	09/18/2013
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/18/2013
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807
Paid Penalty:	807
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807
Year:	2013
Violation Number:	6380825
Date Issued:	09/07/2005
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/08/2005
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	60.00
Paid Penalty:	60.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	60.00
Year:	2005
Violation Number:	6380826
Date Issued:	09/07/2005
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/08/2005
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	60.00
Paid Penalty:	60.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	60.00
Year:	2005
Violation Number:	6380827
Date Issued:	09/07/2005
Mine Status:	Active
Status Date:	12/02/2014
Action Type:	104(a)
Date Abated:	09/08/2005
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	60.00
Paid Penalty:	60.00

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2005

Violation Number: 6380828
Date Issued: 09/07/2005
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/08/2005
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 60.00
Paid Penalty: 60.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 60.00
Year: 2005

Violation Number: 6440040
Date Issued: 09/05/2008
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/05/2008
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2008

Violation Number: 7980726
Date Issued: 09/02/2009
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/17/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 7980724
Date Issued: 09/01/2009
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/03/2009
Citation/Order: Citation

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 7980725
Date Issued: 09/01/2009
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/01/2009
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100.00
Paid Penalty: 100.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100.00
Year: 2009

Violation Number: 8689480
Date Issued: 08/30/2012
Mine Status: Active
Status Date: 12/02/2014
Action Type: 104(a)
Date Abated: 09/07/2012
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100
Paid Penalty: 100
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469062**

Click this hyperlink while viewing on your computer to access
79 additional US_MINES: record(s) in the EDR Site Report.

A3 **NORTH COUNTY SAND & GRAVEL INC** **US MINES** **1016469094**
NE **N/A**
1/8-1/4 **SAN BERNARDINO (County), CA**
0.163 mi.
859 ft. **Site 3 of 4 in cluster A**

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0405632
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	ROADRUNNER 32
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	2
Status date:	20170105
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	33 44 26
Longitude:	117 10 54

Violations Details:

Violation Number:	8607598
Date Issued:	12/27/2012
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	Not reported
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	Not reported
Paid Penalty:	Not reported
Assessment Status code:	Not reported
Assess. Case Status code:	Not reported
Assessment Amount:	Not reported
Year:	2012

Violation Number:	6485394
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2009

Violation Number:	6485390
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	108.00
Paid Penalty:	108.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	108.00
Year:	2009

Violation Number:	6485392
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/16/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	807.00
Paid Penalty:	807.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	807.00
Year:	2009

Violation Number:	6485389
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	108.00
Paid Penalty:	108.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	108.00
Year:	2009

Violation Number:	6485393
Date Issued:	12/15/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	12/15/2009
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	540.00
Paid Penalty:	540.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	540.00
Year:	2009

Violation Number:	8560328

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Date Issued:	11/03/2010
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	11/12/2010
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2010

Violation Number:	8560329
Date Issued:	11/03/2010
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	11/12/2010
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2010

Violation Number:	6440067
Date Issued:	10/21/2008
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	10/21/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2008

Violation Number:	6440049
Date Issued:	10/02/2008
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	10/02/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Year:	2008
Violation Number:	6440669
Date Issued:	09/02/2008
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	09/02/2008
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2008
Violation Number:	8607736
Date Issued:	06/28/2012
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	07/02/2012
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100
Paid Penalty:	100
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100
Year:	2012
Violation Number:	8607733
Date Issued:	06/28/2012
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	07/02/2012
Citation/Order:	Citation
Sig and Sub Designation:	Y
Proposed Penalty:	108
Paid Penalty:	108
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	108
Year:	2012
Violation Number:	8607735
Date Issued:	06/28/2012
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	07/02/2012
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100
Paid Penalty:	100

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

Violation Number: 8607734
Date Issued: 06/28/2012
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 07/02/2012
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 100
Paid Penalty: 100
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 100
Year: 2012

Violation Number: 6485481
Date Issued: 04/27/2010
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 04/27/2010
Citation/Order: Citation
Sig and Sub Designation: N
Proposed Penalty: 108.00
Paid Penalty: 108.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 108.00
Year: 2010

Violation Number: 6485482
Date Issued: 04/27/2010
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 04/27/2010
Citation/Order: Citation
Sig and Sub Designation: Y
Proposed Penalty: 1,795.00
Paid Penalty: 1,795.00
Assessment Status code: Closed
Assess. Case Status code: Proposed
Assessment Amount: 1,795.00
Year: 2010

Violation Number: 6485483
Date Issued: 04/27/2010
Mine Status: Abandoned
Status Date: 03/11/2014
Action Type: 104(a)
Date Abated: 04/27/2010
Citation/Order: Citation

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Sig and Sub Designation:	N
Proposed Penalty:	362.00
Paid Penalty:	362.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	362.00
Year:	2010

Violation Number:	7980688
Date Issued:	04/23/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(a)
Date Abated:	05/05/2009
Citation/Order:	Citation
Sig and Sub Designation:	N
Proposed Penalty:	100.00
Paid Penalty:	100.00
Assessment Status code:	Closed
Assess. Case Status code:	Proposed
Assessment Amount:	100.00
Year:	2009

Violation Number:	7980682-00014193A
Date Issued:	04/16/2009
Mine Status:	Abandoned
Status Date:	03/11/2014
Action Type:	104(d)(1)
Date Abated:	04/27/2009
Citation/Order:	Order
Sig and Sub Designation:	Y
Proposed Penalty:	1,200.00
Paid Penalty:	0.00
Assessment Status code:	Received
Assess. Case Status code:	Proposed
Assessment Amount:	1,200.00
Year:	2009

NORTH COUNTY SAND & GRAVEL INC (Continued) **1016469094**

Click this hyperlink while viewing on your computer to access
21 additional US_MINES: record(s) in the EDR Site Report.

A4 **NORTH COUNTY SAND & GRAVEL INC** **US MINES** **1011130475**
NE **N/A**
1/8-1/4 **SAN BERNARDINO (County), CA**
0.163 mi.
859 ft. **Site 4 of 4 in cluster A**

Relative:
Higher

Actual:
1432 ft.

US MINES:

Mine ID:	0402253
SIC code(s):	144200 000000 000000 000000 000000 000000
Entity name:	TWIN CREEKS SPREADING GROUND
Company:	NORTH COUNTY SAND & GRAVEL INC
Status:	4
Status date:	20000907
Operation Class:	non-Coal Mining
Number of shops:	0
Number of plants:	0
Latitude:	00 00 00
Longitude:	000 00 00

B5 **FAB-TECH 17** **ABANDONED MINES** **1022837824**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **MENIFEE, CA 92585**
0.209 mi.
1105 ft. **Site 1 of 4 in cluster B**

Relative:
Higher

Actual:
1432 ft.

ABANDONED MINES:

Mine ID:	0405517
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2012-07-02 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Menifee
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	MENIFEE
Assessment Address State:	CA
Assessment Address Zip Code:	92585
Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Menifee
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	33.740555
Longitude:	117.181666

B6 **FAB-TECH 49** **ABANDONED MINES** **1022837846**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **ROMOLAND, CA 92585**
0.209 mi.
1105 ft. **Site 2 of 4 in cluster B**

Relative: **Higher**
Actual: **1432 ft.**

ABANDONED MINES:

Mine ID:	0405549
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2009-09-10 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Romoland
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	ROMOLAND
Assessment Address State:	CA
Assessment Address Zip Code:	92585
Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Romoland
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	Not reported
Longitude:	Not reported

B7 **FAB-TECH 18** **ABANDONED MINES** **1022896526**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **MENIFEE, CA 92585**
0.209 mi.
1105 ft. **Site 3 of 4 in cluster B**

Relative: **Higher**
Actual: **1432 ft.**

ABANDONED MINES:

Mine ID:	0405518
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2017-01-04 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Menifee
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	MENIFEE
Assessment Address State:	CA
Assessment Address Zip Code:	92585

FAB-TECH 18 (Continued) **1022896526**

Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Menifee
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	33.740556
Longitude:	117.181667

B8 **FAB-TECH 45** **ABANDONED MINES** **1022837905**
NE **26227 SHERMAN RD** **N/A**
1/8-1/4 **MENIFEE, CA 92585**
0.209 mi.
1105 ft. **Site 4 of 4 in cluster B**

Relative: **Higher**
Actual: **1432 ft.**

ABANDONED MINES:

Mine ID:	0405645
Mine Type:	Surface
Mine Status Description:	Abandoned
Mine Status Date:	2012-12-07 00:00:00
Coal (C) or Metal (M) Mine:	M
Controller ID:	M07059
Controller Name:	Mike J LaPaglia
Operator ID:	L08940
Operator name:	North County Sand & Gravel Inc
Address of Record Street:	26227 Sherman Rd
Address of Record PO Box:	Not reported
Address of Record City:	Menifee
Address of Record State:	CA
Address of Record Zip Code:	92585
Assessment Address Street:	26227 Sherman Road
Assessment Address PO Box:	Not reported
Assessment Address City:	MENIFEE
Assessment Address State:	CA
Assessment Address Zip Code:	92585
Mine Health and Safety Address Street:	26227 Sherman Rd
Mine Health and Safety Address PO Box:	Not reported
Mine Health and Safety Address City:	Menifee
Mine Health and Safety Address State:	CA
Mine Health and Safety Address Zip Code:	92585
Latitude:	Not reported
Longitude:	Not reported

C9 **CHANEY'S AUTO** **LUST** **S101300608**
NNE **27411 ETHANAC ROAD** **HIST CORTESE** **N/A**
1/4-1/2 **ROMOLAND, CA 92580**
0.271 mi.
1429 ft. **Site 1 of 2 in cluster C**

Relative: **Higher**
Actual: **1432 ft.**

LUST REG 8:

Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Preliminary site assessment underway
Case Number:	083302297T
Local Case Num:	93620
Case Type:	Aquifer affected

CHANEY'S AUTO (Continued) **S101300608**

Substance:	Waste Oil
Qty Leaked:	Not reported
Abate Method:	Not reported
Cross Street:	Not reported
Enf Type:	Not reported
Funding:	Not reported
How Discovered:	Tank Closure
How Stopped:	Not reported
Leak Cause:	UNK
Leak Source:	UNK
Global ID:	T0606500332
How Stopped Date:	9/30/1992
Enter Date:	9/3/1993
Date Confirmation of Leak Began:	9/30/1992
Date Preliminary Assessment Began:	7/9/1993
Discover Date:	9/30/1992
Enforcement Date:	Not reported
Close Date:	Not reported
Date Prelim Assessment Workplan Submitted:	Not reported
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	Not reported
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	Not reported
Enter Date:	9/3/1993
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.7428122
Longitude:	-117.1834162
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	0
MTBE Tested:	Not Required to be Tested.
MTBE Class:	*
Staff:	VJJ
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	SAN JACINTO (8-5)
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

HIST CORTESE:

Region:	CORTESE
Facility County Code:	33
Reg By:	LTNKA
Reg Id:	083302297T

C10
NNE
1/4-1/2
0.271 mi.
1429 ft.

CHANEY'S AUTOMOTIVE
27411 ETHANAC ROAD
ROMOLAND, CA 92580

Site 2 of 2 in cluster C

LUST **S103820949**
N/A

Relative:
Higher

Actual:
1432 ft.

LUST:

Lead Agency:	RIVERSIDE COUNTY LOP
Case Type:	LUST Cleanup Site
Geo Track:	http://geotracker.waterboards.ca.gov/profile_report.asp?global_id=T0606500332
Global Id:	T0606500332
Latitude:	33.7424785024374
Longitude:	-117.182165506781
Status:	Completed - Case Closed
Status Date:	09/29/2000
Case Worker:	RIV
RB Case Number:	083302297T
Local Agency:	RIVERSIDE COUNTY LOP
File Location:	Local Agency Warehouse
Local Case Number:	93620
Potential Media Affect:	Aquifer used for drinking water supply
Potential Contaminants of Concern:	Waste Oil / Motor / Hydraulic / Lubricating
Site History:	Not reported

LUST:

Global Id:	T0606500332
Contact Type:	Local Agency Caseworker
Contact Name:	Riverside County LOP
Organization Name:	RIVERSIDE COUNTY LOP
Address:	3880 LEMON ST SUITE 200
City:	RIVERSIDE
Email:	Not reported
Phone Number:	9519558980

Global Id:	T0606500332
Contact Type:	Regional Board Caseworker
Contact Name:	VALERIE JAHN-BULL
Organization Name:	SANTA ANA RWQCB (REGION 8)
Address:	3737 MAIN STREET, SUITE 500
City:	RIVERSIDE
Email:	valerie.jahn-bull@waterboards.ca.gov
Phone Number:	9517824903

LUST:

Global Id:	T0606500332
Action Type:	ENFORCEMENT
Date:	09/29/2000
Action:	Closure/No Further Action Letter - #Riv Co Closure

Global Id:	T0606500332
Action Type:	ENFORCEMENT
Date:	09/28/2000
Action:	File review - #RCDEH Upload Site File 4/21/2010

Global Id:	T0606500332
Action Type:	Other
Date:	10/02/1992
Action:	Leak Reported

CHANEY'S AUTOMOTIVE (Continued) **S103820949**

Global Id: T0606500332
Action Type: Other
Date: 09/30/1992
Action: Leak Stopped

Global Id: T0606500332
Action Type: Other
Date: 09/30/1992
Action: Leak Discovery

LUST:
Global Id: T0606500332
Status: Open - Case Begin Date
Status Date: 09/30/1992

Global Id: T0606500332
Status: Open - Site Assessment
Status Date: 09/30/1992

Global Id: T0606500332
Status: Open - Site Assessment
Status Date: 07/09/1993

Global Id: T0606500332
Status: Completed - Case Closed
Status Date: 09/29/2000

RIVERSIDE CO. LUST:
Region: RIVERSIDE
Facility ID: 93620
Employee: Malloy
Site Closed: Yes
Case Type: Soil only
Facility Status: closed/action completed
Casetype Decode: Soil only is impacted
Fstatus Decode: Closed/Action completed

11
NE
1/4-1/2
0.315 mi.
1663 ft.

NEILL #39;S RECYCLING **SWRCY** **S111023774**
26026 SHERMAN RD **NPDES** **N/A**
MENIFEE, CA 92585

Relative:
Higher

Actual:
1434 ft.

SWRCY:
Reg Id: 137839
Cert Id: RC137839.001
Mailing Address: 26026 Sherman Rd
Mailing City: Menifee
Mailing State: CA
Mailing Zip Code: 92585
Website: Not reported
Email: superbrentpower@gmail.com
Phone Number: (951) 514-8656
Grand Father: N
Rural: N
Operation Begin Date: 03/15/2011

NEILL #39;S RECYCLING (Continued) **S111023774**

Aluminium:	Y
Glass:	Y
Plastic:	Y
Bimetal:	Y
Agency:	N/A
Monday Hours Of Operation:	8:00 am - 5:00 pm
Tuesday Hours Of Operation:	8:00 am - 5:00 pm
Wednesday Hours Of Operation:	8:00 am - 5:00 pm
Thursday Hours Of Operation:	8:00 am - 5:00 pm
Friday Hours Of Operation:	8:00 am - 5:00 pm
Saturday Hours Of Operation:	8:00 am - 5:00 pm
Sunday Hours Of Operation:	; Closed 11:00 am - 12:00 pmCLOSED
Organization ID:	136049
Organization Name:	Neill #39;s Recycling

NPDES:

Npdes Number:	Not reported
Facility Status:	Not reported
Agency Id:	Not reported
Region:	8
Regulatory Measure Id:	434700
Order No:	Not reported
Regulatory Measure Type:	Industrial
Place Id:	Not reported
WDID:	8 33NEC000396
Program Type:	Not reported
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	Not reported
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Not reported
Discharge Address:	Not reported
Discharge City:	Not reported
Discharge State:	Not reported
Discharge Zip:	Not reported
RECEIVED DATE:	08/18/2015
PROCESSED DATE:	02/05/2013
STATUS CODE NAME:	Active
STATUS DATE:	08/18/2015
PLACE SIZE:	39204
PLACE SIZE UNIT:	SqFt
FACILITY CONTACT NAME:	Brent Neill
FACILITY CONTACT TITLE:	owner
FACILITY CONTACT PHONE:	951-514-8656
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	superbrentpower@gmail.com
OPERATOR NAME:	Brent Neil
OPERATOR ADDRESS:	26026 Sherman Rd
OPERATOR CITY:	Menifee
OPERATOR STATE:	California
OPERATOR ZIP:	92585
OPERATOR CONTACT NAME:	Brent Neill
OPERATOR CONTACT TITLE:	owner
OPERATOR CONTACT PHONE:	951-514-8656
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	superbrentpower@gmail.com
OPERATOR TYPE:	Private Business

NEILL #39;S RECYCLING (Continued) **S111023774**

DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	California
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	N
RECEIVING WATER NAME:	eastern municipal water district
CERTIFIER NAME:	Brent Neill
CERTIFIER TITLE:	owner
CERTIFICATION DATE:	28-SEP-16
PRIMARY SIC:	5093-Scrap and Waste Materials
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported
Npdes Number:	CAS000001
Facility Status:	Active
Agency Id:	0
Region:	8
Regulatory Measure Id:	434700
Order No:	97-03-DWQ
Regulatory Measure Type:	Enrollee
Place Id:	Not reported
WDID:	8 33NEC000396
Program Type:	Industrial
Adoption Date Of Regulatory Measure:	Not reported
Effective Date Of Regulatory Measure:	02/05/2013
Expiration Date Of Regulatory Measure:	Not reported
Termination Date Of Regulatory Measure:	Not reported
Discharge Name:	Brent Neil
Discharge Address:	26026 Sherman Rd
Discharge City:	Menifee
Discharge State:	California
Discharge Zip:	92585
RECEIVED DATE:	Not reported
PROCESSED DATE:	Not reported
STATUS CODE NAME:	Not reported

NEILL #39;S RECYCLING (Continued) **S111023774**

STATUS DATE:	Not reported
PLACE SIZE:	Not reported
PLACE SIZE UNIT:	Not reported
FACILITY CONTACT NAME:	Not reported
FACILITY CONTACT TITLE:	Not reported
FACILITY CONTACT PHONE:	Not reported
FACILITY CONTACT PHONE EXT:	Not reported
FACILITY CONTACT EMAIL:	Not reported
OPERATOR NAME:	Not reported
OPERATOR ADDRESS:	Not reported
OPERATOR CITY:	Not reported
OPERATOR STATE:	Not reported
OPERATOR ZIP:	Not reported
OPERATOR CONTACT NAME:	Not reported
OPERATOR CONTACT TITLE:	Not reported
OPERATOR CONTACT PHONE:	Not reported
OPERATOR CONTACT PHONE EXT:	Not reported
OPERATOR CONTACT EMAIL:	Not reported
OPERATOR TYPE:	Not reported
DEVELOPER NAME:	Not reported
DEVELOPER ADDRESS:	Not reported
DEVELOPER CITY:	Not reported
DEVELOPER STATE:	Not reported
DEVELOPER ZIP:	Not reported
DEVELOPER CONTACT NAME:	Not reported
DEVELOPER CONTACT TITLE:	Not reported
CONSTYPE LINEAR UTILITY IND:	Not reported
EMERGENCY PHONE NO:	Not reported
EMERGENCY PHONE EXT:	Not reported
CONSTYPE ABOVE GROUND IND:	Not reported
CONSTYPE BELOW GROUND IND:	Not reported
CONSTYPE CABLE LINE IND:	Not reported
CONSTYPE COMM LINE IND:	Not reported
CONSTYPE COMMERTIAL IND:	Not reported
CONSTYPE ELECTRICAL LINE IND:	Not reported
CONSTYPE GAS LINE IND:	Not reported
CONSTYPE INDUSTRIAL IND:	Not reported
CONSTYPE OTHER DESRIPTION:	Not reported
CONSTYPE OTHER IND:	Not reported
CONSTYPE RECONS IND:	Not reported
CONSTYPE RESIDENTIAL IND:	Not reported
CONSTYPE TRANSPORT IND:	Not reported
CONSTYPE UTILITY DESCRIPTION:	Not reported
CONSTYPE UTILITY IND:	Not reported
CONSTYPE WATER SEWER IND:	Not reported
DIR DISCHARGE USWATER IND:	Not reported
RECEIVING WATER NAME:	Not reported
CERTIFIER NAME:	Not reported
CERTIFIER TITLE:	Not reported
CERTIFICATION DATE:	Not reported
PRIMARY SIC:	Not reported
SECONDARY SIC:	Not reported
TERTIARY SIC:	Not reported

12
WSW
1/2-1
0.870 mi.
4596 ft.

THE CLUB K-8 SCHOOL
EVANS ROAD/NOVA LANE
ROMOLAND, CA 92586

ENVIROSTOR
SCH

S105628774
N/A

Relative:
Lower

Actual:
1425 ft.

ENVIROSTOR:

Facility ID:	33010067
Status:	No Further Action
Status Date:	04/17/2003
Site Code:	404389
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	19.08
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	67
Senate:	23
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.73257
Longitude:	-117.1943
APN:	331-080-008, 331-080-009, 331-080-010, 331-080-011
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE Lead Chromium VI Cobalt Copper and compounds Nickel (soluble salts
Confirmed COC:	Chromium VI Cobalt Copper and compounds Nickel (soluble salts DDE Lead
Potential Description:	SOIL
Alias Name:	CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	ROMOLAND ELEMENTARY SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	ROMOLAND SD-THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	331-080-008
Alias Type:	APN
Alias Name:	331-080-009
Alias Type:	APN
Alias Name:	331-080-010
Alias Type:	APN
Alias Name:	331-080-011
Alias Type:	APN
Alias Name:	404389
Alias Type:	Project Code (Site Code)
Alias Name:	33010067
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Completed Date:	04/17/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	09/27/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Technical Report
Completed Date:	12/24/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	10/28/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

SCH:

Facility ID:	33010067
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	19.08
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Javier Hinojosa
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404389
Assembly:	67
Senate:	23
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	04/17/2003

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Restricted Use:	NO
Funding:	School District
Latitude:	33.73257
Longitude:	-117.1943
APN:	331-080-008, 331-080-009, 331-080-010, 331-080-011
Past Use:	AGRICULTURAL - ROW CROPS
Potential COC:	DDE, Lead, Chromium VI, Cobalt, Copper and compounds, Nickel (soluble salts
Confirmed COC:	Chromium VI, Cobalt, Copper and compounds, Nickel (soluble salts, DDE, Lead
Potential Description:	SOIL
Alias Name:	CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	ROMOLAND ELEMENTARY SCHOOL DISTRICT
Alias Type:	Alternate Name
Alias Name:	ROMOLAND SD-THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	THE CLUB K-8 SCHOOL
Alias Type:	Alternate Name
Alias Name:	331-080-008
Alias Type:	APN
Alias Name:	331-080-009
Alias Type:	APN
Alias Name:	331-080-010
Alias Type:	APN
Alias Name:	331-080-011
Alias Type:	APN
Alias Name:	404389
Alias Type:	Project Code (Site Code)
Alias Name:	33010067
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	04/17/2003
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	09/27/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Technical Report
Completed Date:	12/24/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	10/28/2002
Comments:	Not reported
Completed Area Name:	PROJECT WIDE

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	04/18/2003
Comments:	Not reported
Future Area Name:	Not reported
Future Sub Area Name:	Not reported
Future Document Type:	Not reported
Future Due Date:	Not reported
Schedule Area Name:	Not reported
Schedule Sub Area Name:	Not reported
Schedule Document Type:	Not reported
Schedule Due Date:	Not reported
Schedule Revised Date:	Not reported

Count: 0 records.

ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
		NO SITES FOUND			

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

To maintain currency of the following federal and state databases, EDR contacts the appropriate governmental agency on a monthly or quarterly basis, as required.

Number of Days to Update: Provides confirmation that EDR is reporting records that have been updated within 90 days from the date the government agency made the information available to the public.

STANDARD ENVIRONMENTAL RECORDS

Federal NPL site list

NPL: National Priority List

National Priorities List (Superfund). The NPL is a subset of CERCLIS and identifies over 1,200 sites for priority cleanup under the Superfund Program. NPL sites may encompass relatively large areas. As such, EDR provides polygon coverage for over 1,000 NPL site boundaries produced by EPA's Environmental Photographic Interpretation Center (EPIC) and regional EPA offices.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

NPL Site Boundaries

Sources:

EPA's Environmental Photographic Interpretation Center (EPIC)
Telephone: 202-564-7333

EPA Region 1
Telephone 617-918-1143

EPA Region 6
Telephone: 214-655-6659

EPA Region 3
Telephone 215-814-5418

EPA Region 7
Telephone: 913-551-7247

EPA Region 4
Telephone 404-562-8033

EPA Region 8
Telephone: 303-312-6774

EPA Region 5
Telephone 312-886-6686

EPA Region 9
Telephone: 415-947-4246

EPA Region 10
Telephone 206-553-8665

Proposed NPL: Proposed National Priority List Sites

A site that has been proposed for listing on the National Priorities List through the issuance of a proposed rule in the Federal Register. EPA then accepts public comments on the site, responds to the comments, and places on the NPL those sites that continue to meet the requirements for listing.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

NPL LIENS: Federal Superfund Liens

Federal Superfund Liens. Under the authority granted the USEPA by CERCLA of 1980, the USEPA has the authority to file liens against real property in order to recover remedial action expenditures or when the property owner received notification of potential liability. USEPA compiles a listing of filed notices of Superfund Liens.

Date of Government Version: 10/15/1991
Date Data Arrived at EDR: 02/02/1994
Date Made Active in Reports: 03/30/1994
Number of Days to Update: 56

Source: EPA
Telephone: 202-564-4267
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

Federal Delisted NPL site list

Delisted NPL: National Priority List Deletions

The National Oil and Hazardous Substances Pollution Contingency Plan (NCP) establishes the criteria that the EPA uses to delete sites from the NPL. In accordance with 40 CFR 300.425.(e), sites may be deleted from the NPL where no further response is appropriate.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 14

Source: EPA
Telephone: N/A
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

Federal CERCLIS list

FEDERAL FACILITY: Federal Facility Site Information listing

A listing of National Priority List (NPL) and Base Realignment and Closure (BRAC) sites found in the Comprehensive Environmental Response, Compensation and Liability Information System (CERCLIS) Database where EPA Federal Facilities Restoration and Reuse Office is involved in cleanup activities.

Date of Government Version: 11/07/2016
Date Data Arrived at EDR: 01/05/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 92

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Varies

SEMS: Superfund Enterprise Management System

SEMS (Superfund Enterprise Management System) tracks hazardous waste sites, potentially hazardous waste sites, and remedial activities performed in support of EPA's Superfund Program across the United States. The list was formerly know as CERCLIS, renamed to SEMS by the EPA in 2015. The list contains data on potentially hazardous waste sites that have been reported to the USEPA by states, municipalities, private companies and private persons, pursuant to Section 103 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA). This dataset also contains sites which are either proposed to or on the National Priorities List (NPL) and the sites which are in the screening and assessment phase for possible inclusion on the NPL.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 66

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Quarterly

Federal CERCLIS NFRAP site list

SEMS-ARCHIVE: Superfund Enterprise Management System Archive

SEMS-ARCHIVE (Superfund Enterprise Management System Archive) tracks sites that have no further interest under the Federal Superfund Program based on available information. The list was formerly known as the CERCLIS-NFRAP, renamed to SEMS ARCHIVE by the EPA in 2015. EPA may perform a minimal level of assessment work at a site while it is archived if site conditions change and/or new information becomes available. Archived sites have been removed and archived from the inventory of SEMS sites. Archived status indicates that, to the best of EPA's knowledge, assessment at a site has been completed and that EPA has determined no further steps will be taken to list the site on the National Priorities List (NPL), unless information indicates this decision was not appropriate or other considerations require a recommendation for listing at a later time. The decision does not necessarily mean that there is no hazard associated with a given site; it only means that. based upon available information, the location is not judged to be potential NPL site.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 66

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Quarterly

Federal RCRA CORRACTS facilities list

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

Federal RCRA non-CORRACTS TSD facilities list

RCRA-TSDF: RCRA - Treatment, Storage and Disposal

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Transporters are individuals or entities that move hazardous waste from the generator offsite to a facility that can recycle, treat, store, or dispose of the waste. TSDFs treat, store, or dispose of the waste.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

Federal RCRA generators list

RCRA-LQG: RCRA - Large Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Large quantity generators (LQGs) generate over 1,000 kilograms (kg) of hazardous waste, or over 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

RCRA-SQG: RCRA - Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Small quantity generators (SQGs) generate between 100 kg and 1,000 kg of hazardous waste per month.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

RCRA-CESQG: RCRA - Conditionally Exempt Small Quantity Generators

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Conditionally exempt small quantity generators (CESQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

Federal institutional controls / engineering controls registries

LUCIS: Land Use Control Information System

LUCIS contains records of land use control information pertaining to the former Navy Base Realignment and Closure properties.

Date of Government Version: 05/22/2017
Date Data Arrived at EDR: 06/13/2017
Date Made Active in Reports: 09/15/2017
Number of Days to Update: 94

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 02/09/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Varies

US ENG CONTROLS: Engineering Controls Sites List

A listing of sites with engineering controls in place. Engineering controls include various forms of caps, building foundations, liners, and treatment methods to create pathway elimination for regulated substances to enter environmental media or effect human health.

Date of Government Version: 11/13/2017
Date Data Arrived at EDR: 11/27/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 74

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

US INST CONTROL: Sites with Institutional Controls

A listing of sites with institutional controls in place. Institutional controls include administrative measures, such as groundwater use restrictions, construction restrictions, property use restrictions, and post remediation care requirements intended to prevent exposure to contaminants remaining on site. Deed restrictions are generally required as part of the institutional controls.

Date of Government Version: 11/13/2017
Date Data Arrived at EDR: 11/27/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 74

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

Federal ERNS list

ERNS: Emergency Response Notification System

Emergency Response Notification System. ERNS records and stores information on reported releases of oil and hazardous substances.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 63

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent NPL

RESPONSE: State Response Sites

Identifies confirmed release sites where DTSC is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

State- and tribal - equivalent CERCLIS

ENVIROSTOR: EnviroStor Database

The Department of Toxic Substances Control's (DTSC's) Site Mitigation and Brownfields Reuse Program's (SMBRP's) EnviroStor database identifes sites that have known contamination or sites for which there may be reasons to investigate further. The database includes the following site types: Federal Superfund sites (National Priorities List (NPL)); State Response, including Military Facilities and State Superfund; Voluntary Cleanup; and School sites. EnviroStor provides similar information to the information that was available in CalSites, and provides additional site information, including, but not limited to, identification of formerly-contaminated properties that have been released for reuse, properties where environmental deed restrictions have been recorded to prevent inappropriate land uses, and risk characterization information that is used to assess potential impacts to public health and the environment at contaminated sites.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

State and tribal landfill and/or solid waste disposal site lists

SWF/LF (SWIS): Solid Waste Information System

Active, Closed and Inactive Landfills. SWF/LF records typically contain an inve ntory of solid waste disposal facilities or landfills. These may be active or i nactive facilities or open dumps that failed to meet RCRA Section 4004 criteria for solid waste landfills or disposal sites.

Date of Government Version: 02/12/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 48

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

LUST REG 6V: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Inyo, Kern, Los Angeles, Mono, San Bernardino counties.

Date of Government Version: 06/07/2005
Date Data Arrived at EDR: 06/07/2005
Date Made Active in Reports: 06/29/2005
Number of Days to Update: 22

Source: California Regional Water Quality Control Board Victorville Branch Office (6)
Telephone: 760-241-7365
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 9: Leaking Underground Storage Tank Report
Orange, Riverside, San Diego counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 03/01/2001
Date Data Arrived at EDR: 04/23/2001
Date Made Active in Reports: 05/21/2001
Number of Days to Update: 28

Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-637-5595
Last EDR Contact: 09/26/2011
Next Scheduled EDR Contact: 01/09/2012
Data Release Frequency: No Update Planned

LUST: Leaking Underground Fuel Tank Report (GEOTRACKER)
Leaking Underground Storage Tank (LUST) Sites included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

LUST REG 7: Leaking Underground Storage Tank Case Listing
Leaking Underground Storage Tank locations. Imperial, Riverside, San Diego, Santa Barbara counties.

Date of Government Version: 02/26/2004
Date Data Arrived at EDR: 02/26/2004
Date Made Active in Reports: 03/24/2004
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Colorado River Basin Region (7)
Telephone: 760-776-8943
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

LUST REG 8: Leaking Underground Storage Tanks
California Regional Water Quality Control Board Santa Ana Region (8). For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/14/2005
Date Data Arrived at EDR: 02/15/2005
Date Made Active in Reports: 03/28/2005
Number of Days to Update: 41

Source: California Regional Water Quality Control Board Santa Ana Region (8)
Telephone: 909-782-4496
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Varies

LUST REG 6L: Leaking Underground Storage Tank Case Listing
For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/09/2003
Date Data Arrived at EDR: 09/10/2003
Date Made Active in Reports: 10/07/2003
Number of Days to Update: 27

Source: California Regional Water Quality Control Board Lahontan Region (6)
Telephone: 530-542-5572
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: No Update Planned

LUST REG 5: Leaking Underground Storage Tank Database
Leaking Underground Storage Tank locations. Alameda, Alpine, Amador, Butte, Colusa, Contra Costa, Calveras, El Dorado, Fresno, Glenn, Kern, Kings, Lake, Lassen, Madera, Mariposa, Merced, Modoc, Napa, Nevada, Placer, Plumas, Sacramento, San Joaquin, Shasta, Solano, Stanislaus, Sutter, Tehama, Tulare, Tuolumne, Yolo, Yuba counties.

Date of Government Version: 07/01/2008
Date Data Arrived at EDR: 07/22/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 9

Source: California Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-4834
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: No Update Planned

LUST REG 4: Underground Storage Tank Leak List

Los Angeles, Ventura counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35

Source: California Regional Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6710
Last EDR Contact: 09/06/2011
Next Scheduled EDR Contact: 12/19/2011
Data Release Frequency: No Update Planned

LUST REG 3: Leaking Underground Storage Tank Database

Leaking Underground Storage Tank locations. Monterey, San Benito, San Luis Obispo, Santa Barbara, Santa Cruz counties.

Date of Government Version: 05/19/2003
Date Data Arrived at EDR: 05/19/2003
Date Made Active in Reports: 06/02/2003
Number of Days to Update: 14

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-542-4786
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: No Update Planned

LUST REG 2: Fuel Leak List

Leaking Underground Storage Tank locations. Alameda, Contra Costa, Marin, Napa, San Francisco, San Mateo, Santa Clara, Solano, Sonoma counties.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: California Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-622-2433
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

LUST REG 1: Active Toxic Site Investigation

Del Norte, Humboldt, Lake, Mendocino, Modoc, Siskiyou, Sonoma, Trinity counties. For more current information, please refer to the State Water Resources Control Board's LUST database.

Date of Government Version: 02/01/2001
Date Data Arrived at EDR: 02/28/2001
Date Made Active in Reports: 03/29/2001
Number of Days to Update: 29

Source: California Regional Water Quality Control Board North Coast (1)
Telephone: 707-570-3769
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

INDIAN LUST R8: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Colorado, Montana, North Dakota, South Dakota, Utah and Wyoming.

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R7: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Iowa, Kansas, and Nebraska

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R4: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Florida, Mississippi and North Carolina.

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R5: Leaking Underground Storage Tanks on Indian Land
Leaking underground storage tanks located on Indian Land in Michigan, Minnesota and Wisconsin.

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R1: Leaking Underground Storage Tanks on Indian Land
A listing of leaking underground storage tank locations on Indian Land.

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R9: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Arizona, California, New Mexico and Nevada

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN LUST R6: Leaking Underground Storage Tanks on Indian Land
LUSTs on Indian land in New Mexico and Oklahoma.

Date of Government Version: 01/06/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

SLIC: Statewide SLIC Cases (GEOTRACKER)
Cleanup Program Sites (CPS; also known as Site Cleanups [SC] and formerly known as Spills, Leaks, Investigations, and Cleanups [SLIC] sites) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Varies

SLIC REG 1: Active Toxic Site Investigations

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2003
Date Data Arrived at EDR: 04/07/2003
Date Made Active in Reports: 04/25/2003
Number of Days to Update: 18

Source: California Regional Water Quality Control Board, North Coast Region (1)
Telephone: 707-576-2220
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 2: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/30/2004
Date Data Arrived at EDR: 10/20/2004
Date Made Active in Reports: 11/19/2004
Number of Days to Update: 30

Source: Regional Water Quality Control Board San Francisco Bay Region (2)
Telephone: 510-286-0457
Last EDR Contact: 09/19/2011
Next Scheduled EDR Contact: 01/02/2012
Data Release Frequency: Quarterly

SLIC REG 3: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/18/2006
Date Data Arrived at EDR: 05/18/2006
Date Made Active in Reports: 06/15/2006
Number of Days to Update: 28

Source: California Regional Water Quality Control Board Central Coast Region (3)
Telephone: 805-549-3147
Last EDR Contact: 07/18/2011
Next Scheduled EDR Contact: 10/31/2011
Data Release Frequency: Semi-Annually

SLIC REG 4: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/17/2004
Date Data Arrived at EDR: 11/18/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 47

Source: Region Water Quality Control Board Los Angeles Region (4)
Telephone: 213-576-6600
Last EDR Contact: 07/01/2011
Next Scheduled EDR Contact: 10/17/2011
Data Release Frequency: Varies

SLIC REG 5: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/01/2005
Date Data Arrived at EDR: 04/05/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 16

Source: Regional Water Quality Control Board Central Valley Region (5)
Telephone: 916-464-3291
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 6V: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing

The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 05/24/2005
Date Data Arrived at EDR: 05/25/2005
Date Made Active in Reports: 06/16/2005
Number of Days to Update: 22

Source: Regional Water Quality Control Board, Victorville Branch
Telephone: 619-241-6583
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: Semi-Annually

SLIC REG 6L: SLIC Sites
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/07/2004
Date Data Arrived at EDR: 09/07/2004
Date Made Active in Reports: 10/12/2004
Number of Days to Update: 35
Source: California Regional Water Quality Control Board, Lahontan Region
Telephone: 530-542-5574
Last EDR Contact: 08/15/2011
Next Scheduled EDR Contact: 11/28/2011
Data Release Frequency: No Update Planned

SLIC REG 7: SLIC List
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 11/24/2004
Date Data Arrived at EDR: 11/29/2004
Date Made Active in Reports: 01/04/2005
Number of Days to Update: 36
Source: California Regional Quality Control Board, Colorado River Basin Region
Telephone: 760-346-7491
Last EDR Contact: 08/01/2011
Next Scheduled EDR Contact: 11/14/2011
Data Release Frequency: No Update Planned

SLIC REG 8: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 04/03/2008
Date Data Arrived at EDR: 04/03/2008
Date Made Active in Reports: 04/14/2008
Number of Days to Update: 11
Source: California Region Water Quality Control Board Santa Ana Region (8)
Telephone: 951-782-3298
Last EDR Contact: 09/12/2011
Next Scheduled EDR Contact: 12/26/2011
Data Release Frequency: Semi-Annually

SLIC REG 9: Spills, Leaks, Investigation & Cleanup Cost Recovery Listing
The SLIC (Spills, Leaks, Investigations and Cleanup) program is designed to protect and restore water quality from spills, leaks, and similar discharges.

Date of Government Version: 09/10/2007
Date Data Arrived at EDR: 09/11/2007
Date Made Active in Reports: 09/28/2007
Number of Days to Update: 17
Source: California Regional Water Quality Control Board San Diego Region (9)
Telephone: 858-467-2980
Last EDR Contact: 08/08/2011
Next Scheduled EDR Contact: 11/21/2011
Data Release Frequency: Annually

State and tribal registered storage tank lists

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 05/15/2017
Date Data Arrived at EDR: 05/30/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 136
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 15
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Semi-Annually

AST: Aboveground Petroleum Storage Tank Facilities
A listing of aboveground storage tank petroleum storage tank locations.

Date of Government Version: 07/06/2016
Date Data Arrived at EDR: 07/12/2016
Date Made Active in Reports: 09/19/2016
Number of Days to Update: 69
Source: California Environmental Protection Agency
Telephone: 916-327-5092
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

INDIAN UST R4: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee and Tribal Nations)

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R6: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 6 (Louisiana, Arkansas, Oklahoma, New Mexico, Texas and 65 Tribes).

Date of Government Version: 04/24/2017
Date Data Arrived at EDR: 07/27/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 134
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R8: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming and 27 Tribal Nations).

Date of Government Version: 10/12/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R10: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 10 (Alaska, Idaho, Oregon, Washington, and Tribal Nations).

Date of Government Version: 10/24/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R1: Underground Storage Tanks on Indian Land
The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont and ten Tribal Nations).

Date of Government Version: 10/14/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80
Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R5: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 5 (Michigan, Minnesota and Wisconsin and Tribal Nations).

Date of Government Version: 10/16/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R7: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 7 (Iowa, Kansas, Missouri, Nebraska, and 9 Tribal Nations).

Date of Government Version: 01/13/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

INDIAN UST R9: Underground Storage Tanks on Indian Land

The Indian Underground Storage Tank (UST) database provides information about underground storage tanks on Indian land in EPA Region 9 (Arizona, California, Hawaii, Nevada, the Pacific Islands, and Tribal Nations).

Date of Government Version: 09/30/2017
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 80

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 01/23/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

VCP: Voluntary Cleanup Program Properties

Contains low threat level properties with either confirmed or unconfirmed releases and the project proponents have request that DTSC oversee investigation and/or cleanup activities and have agreed to provide coverage for DTSC's costs.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

INDIAN VCP R1: Voluntary Cleanup Priority Listing

A listing of voluntary cleanup priority sites located on Indian Land located in Region 1.

Date of Government Version: 07/27/2015
Date Data Arrived at EDR: 09/29/2015
Date Made Active in Reports: 02/18/2016
Number of Days to Update: 142

Source: EPA, Region 1
Telephone: 617-918-1102
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Varies

INDIAN VCP R7: Voluntary Cleanup Priority Lisitng

A listing of voluntary cleanup priority sites located on Indian Land located in Region 7.

Date of Government Version: 03/20/2008
Date Data Arrived at EDR: 04/22/2008
Date Made Active in Reports: 05/19/2008
Number of Days to Update: 27

Source: EPA, Region 7
Telephone: 913-551-7365
Last EDR Contact: 04/20/2009
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

State and tribal Brownfields sites

BROWNFIELDS: Considered Brownfieds Sites Listing
A listing of sites the SWRCB considers to be Brownfields since these are sites have come to them through the MOA Process.

Date of Government Version: 12/22/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 01/31/2018
Number of Days to Update: 36
Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

ADDITIONAL ENVIRONMENTAL RECORDS

Local Brownfield lists

US BROWNFIELDS: A Listing of Brownfields Sites
Brownfields are real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant. Cleaning up and reinvesting in these properties takes development pressures off of undeveloped, open land, and both improves and protects the environment. Assessment, Cleanup and Redevelopment Exchange System (ACRES) stores information reported by EPA Brownfields grant recipients on brownfields properties assessed or cleaned up with grant funding as well as information on Targeted Brownfields Assessments performed by EPA Regions. A listing of ACRES Brownfield sites is obtained from Cleanups in My Community. Cleanups in My Community provides information on Brownfields properties for which information is reported back to EPA, as well as areas served by Brownfields grant programs.

Date of Government Version: 01/19/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 21
Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Semi-Annually

Local Lists of Landfill / Solid Waste Disposal Sites

WMUDS/SWAT: Waste Management Unit Database
Waste Management Unit Database System. WMUDS is used by the State Water Resources Control Board staff and the Regional Water Quality Control Boards for program tracking and inventory of waste management units. WMUDS is composed of the following databases: Facility Information, Scheduled Inspections Information, Waste Management Unit Information, SWAT Program Information, SWAT Report Summary Information, SWAT Report Summary Data, Chapter 15 (formerly Subchapter 15) Information, Chapter 15 Monitoring Parameters, TPCA Program Information, RCRA Program Information, Closure Information, and Interested Parties Information.

Date of Government Version: 04/01/2000
Date Data Arrived at EDR: 04/10/2000
Date Made Active in Reports: 05/10/2000
Number of Days to Update: 30
Source: State Water Resources Control Board
Telephone: 916-227-4448
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/17/2018
Number of Days to Update: 36
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/09/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 39

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 02/09/2018
Next Scheduled EDR Contact: 02/26/2018
Data Release Frequency: Varies

INDIAN ODI: Report on the Status of Open Dumps on Indian Lands

Location of open dumps on Indian land.

Date of Government Version: 12/31/1998
Date Data Arrived at EDR: 12/03/2007
Date Made Active in Reports: 01/24/2008
Number of Days to Update: 52

Source: Environmental Protection Agency
Telephone: 703-308-8245
Last EDR Contact: 01/30/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

DEBRIS REGION 9: Torres Martinez Reservation Illegal Dump Site Locations

A listing of illegal dump sites location on the Torres Martinez Indian Reservation located in eastern Riverside County and northern Imperial County, California.

Date of Government Version: 01/12/2009
Date Data Arrived at EDR: 05/07/2009
Date Made Active in Reports: 09/21/2009
Number of Days to Update: 137

Source: EPA, Region 9
Telephone: 415-947-4219
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: No Update Planned

ODI: Open Dump Inventory

An open dump is defined as a disposal facility that does not comply with one or more of the Part 257 or Part 258 Subtitle D Criteria.

Date of Government Version: 06/30/1985
Date Data Arrived at EDR: 08/09/2004
Date Made Active in Reports: 09/17/2004
Number of Days to Update: 39

Source: Environmental Protection Agency
Telephone: 800-424-9346
Last EDR Contact: 06/09/2004
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

IHS OPEN DUMPS: Open Dumps on Indian Land

A listing of all open dumps located on Indian Land in the United States.

Date of Government Version: 04/01/2014
Date Data Arrived at EDR: 08/06/2014
Date Made Active in Reports: 01/29/2015
Number of Days to Update: 176

Source: Department of Health & Human Serivces, Indian Health Service
Telephone: 301-443-1452
Last EDR Contact: 02/02/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

Local Lists of Hazardous waste / Contaminated Sites

US HIST CDL: National Clandestine Laboratory Register

A listing of clandestine drug lab locations that have been removed from the DEAs National Clandestine Laboratory Register.

Date of Government Version: 01/19/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 16

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: No Update Planned

HIST CAL-SITES: Calsites Database

The Calsites database contains potential or confirmed hazardous substance release properties. In 1996, California EPA reevaluated and significantly reduced the number of sites in the Calsites database. No longer updated by the state agency. It has been replaced by ENVIROSTOR.

Date of Government Version: 08/08/2005
Date Data Arrived at EDR: 08/03/2006
Date Made Active in Reports: 08/24/2006
Number of Days to Update: 21

Source: Department of Toxic Substance Control
Telephone: 916-323-3400
Last EDR Contact: 02/23/2009
Next Scheduled EDR Contact: 05/25/2009
Data Release Frequency: No Update Planned

SCH: School Property Evaluation Program

This category contains proposed and existing school sites that are being evaluated by DTSC for possible hazardous materials contamination. In some cases, these properties may be listed in the CalSites category depending on the level of threat to public health and safety or the environment they pose.

Date of Government Version: 01/30/2018
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 47

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

CDL: Clandestine Drug Labs

A listing of drug lab locations. Listing of a location in this database does not indicate that any illegal drug lab materials were or were not present there, and does not constitute a determination that the location either requires or does not require additional cleanup work.

Date of Government Version: 06/30/2017
Date Data Arrived at EDR: 08/18/2017
Date Made Active in Reports: 09/21/2017
Number of Days to Update: 34

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Varies

TOXIC PITS: Toxic Pits Cleanup Act Sites

Toxic PITS Cleanup Act Sites. TOXIC PITS identifies sites suspected of containing hazardous substances where cleanup has not yet been completed.

Date of Government Version: 07/01/1995
Date Data Arrived at EDR: 08/30/1995
Date Made Active in Reports: 09/26/1995
Number of Days to Update: 27

Source: State Water Resources Control Board
Telephone: 916-227-4364
Last EDR Contact: 01/26/2009
Next Scheduled EDR Contact: 04/27/2009
Data Release Frequency: No Update Planned

US CDL: Clandestine Drug Labs

A listing of clandestine drug lab locations. The U.S. Department of Justice ("the Department") provides this web site as a public service. It contains addresses of some locations where law enforcement agencies reported they found chemicals or other items that indicated the presence of either clandestine drug laboratories or dumpsites. In most cases, the source of the entries is not the Department, and the Department has not verified the entry and does not guarantee its accuracy. Members of the public must verify the accuracy of all entries by, for example, contacting local law enforcement and local health departments.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 16

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 02/27/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Quarterly

Local Lists of Registered Storage Tanks

SWEEPS UST: SWEEPS UST Listing

Statewide Environmental Evaluation and Planning System. This underground storage tank listing was updated and maintained by a company contacted by the SWRCB in the early 1990's. The listing is no longer updated or maintained. The local agency is the contact for more information on a site on the SWEEPS list.

Date of Government Version: 06/01/1994
Date Data Arrived at EDR: 07/07/2005
Date Made Active in Reports: 08/11/2005
Number of Days to Update: 35

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/03/2005
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 02/28/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 27

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Annually

HIST UST: Hazardous Substance Storage Container Database
The Hazardous Substance Storage Container Database is a historical listing of UST sites. Refer to local/county source for current data.

Date of Government Version: 10/15/1990
Date Data Arrived at EDR: 01/25/1991
Date Made Active in Reports: 02/12/1991
Number of Days to Update: 18

Source: State Water Resources Control Board
Telephone: 916-341-5851
Last EDR Contact: 07/26/2001
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CA FID UST: Facility Inventory Database
The Facility Inventory Database (FID) contains a historical listing of active and inactive underground storage tank locations from the State Water Resource Control Board. Refer to local/county source for current data.

Date of Government Version: 10/31/1994
Date Data Arrived at EDR: 09/05/1995
Date Made Active in Reports: 09/29/1995
Number of Days to Update: 24

Source: California Environmental Protection Agency
Telephone: 916-341-5851
Last EDR Contact: 12/28/1998
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Local Land Records

LIENS: Environmental Liens Listing
A listing of property locations with environmental liens for California where DTSC is a lien holder.

Date of Government Version: 01/28/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 46

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

LIENS 2: CERCLA Lien Information
A Federal CERCLA ('Superfund') lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. These monies are spent to investigate and address releases and threatened releases of contamination. CERCLIS provides information as to the identity of these sites and properties.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 02/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Semi-Annually

DEED: Deed Restriction Listing

Site Mitigation and Brownfields Reuse Program Facility Sites with Deed Restrictions & Hazardous Waste Management Program Facility Sites with Deed / Land Use Restriction. The DTSC Site Mitigation and Brownfields Reuse Program (SMBRP) list includes sites cleaned up under the program's oversight and generally does not include current or former hazardous waste facilities that required a hazardous waste facility permit. The list represents deed restrictions that are active. Some sites have multiple deed restrictions. The DTSC Hazardous Waste Management Program (HWMP) has developed a list of current or former hazardous waste facilities that have a recorded land use restriction at the local county recorder's office. The land use restrictions on this list were required by the DTSC HWMP as a result of the presence of hazardous substances that remain on site after the facility (or part of the facility) has been closed or cleaned up. The types of land use restriction include deed notice, deed restriction, or a land use restriction that binds current and future owners.

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/08/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 0

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Semi-Annually

Records of Emergency Release Reports

HMIRS: Hazardous Materials Information Reporting System

Hazardous Materials Incident Report System. HMIRS contains hazardous material spill incidents reported to DOT.

Date of Government Version: 01/19/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 63

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

CHMIRS: California Hazardous Material Incident Report System

California Hazardous Material Incident Reporting System. CHMIRS contains information on reported hazardous material incidents (accidental releases or spills).

Date of Government Version: 02/15/2018
Date Data Arrived at EDR: 02/20/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 42

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 02/20/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Semi-Annually

LDS: Land Disposal Sites Listing (GEOTRACKER)

Land Disposal sites (Landfills) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

MCS: Military Cleanup Sites Listing (GEOTRACKER)

Military sites (consisting of: Military UST sites; Military Privatized sites; and Military Cleanup sites [formerly known as DoD non UST]) included in GeoTracker. GeoTracker is the Water Boards data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Date of Government Version: 03/12/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 7

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/12/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

SPILLS 90: SPILLS90 data from FirstSearch

Spills 90 includes those spill and release records available exclusively from FirstSearch databases. Typically, they may include chemical, oil and/or hazardous substance spills recorded after 1990. Duplicate records that are already included in EDR incident and release records are not included in Spills 90.

Date of Government Version: 06/06/2012
Date Data Arrived at EDR: 01/03/2013
Date Made Active in Reports: 02/22/2013
Number of Days to Update: 50

Source: FirstSearch
Telephone: N/A
Last EDR Contact: 01/03/2013
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

Other Ascertainable Records

RCRA NonGen / NLR: RCRA - Non Generators / No Longer Regulated

RCRAInfo is EPA's comprehensive information system, providing access to data supporting the Resource Conservation and Recovery Act (RCRA) of 1976 and the Hazardous and Solid Waste Amendments (HSWA) of 1984. The database includes selective information on sites which generate, transport, store, treat and/or dispose of hazardous waste as defined by the Resource Conservation and Recovery Act (RCRA). Non-Generators do not presently generate hazardous waste.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/26/2017
Date Made Active in Reports: 02/09/2018
Number of Days to Update: 45

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

FUDS: Formerly Used Defense Sites

The listing includes locations of Formerly Used Defense Sites properties where the US Army Corps of Engineers is actively working or will take necessary cleanup actions.

Date of Government Version: 01/31/2015
Date Data Arrived at EDR: 07/08/2015
Date Made Active in Reports: 10/13/2015
Number of Days to Update: 97

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

DOD: Department of Defense Sites

This data set consists of federally owned or administered lands, administered by the Department of Defense, that have any area equal to or greater than 640 acres of the United States, Puerto Rico, and the U.S. Virgin Islands.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 11/10/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 62

Source: USGS
Telephone: 888-275-8747
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

FEDLAND: Federal and Indian Lands

Federally and Indian administrated lands of the United States. Lands included are administrated by: Army Corps of Engineers, Bureau of Reclamation, National Wild and Scenic River, National Wildlife Refuge, Public Domain Land, Wilderness, Wilderness Study Area, Wildlife Management Area, Bureau of Indian Affairs, Bureau of Land Management, Department of Justice, Forest Service, Fish and Wildlife Service, National Park Service.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 02/06/2006
Date Made Active in Reports: 01/11/2007
Number of Days to Update: 339

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: N/A

SCRD DRYCLEANERS: State Coalition for Remediation of Drycleaners Listing

The State Coalition for Remediation of Drycleaners was established in 1998, with support from the U.S. EPA Office of Superfund Remediation and Technology Innovation. It is comprised of representatives of states with established drycleaner remediation programs. Currently the member states are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 02/03/2017
Date Made Active in Reports: 04/07/2017
Number of Days to Update: 63
Source: Environmental Protection Agency
Telephone: 615-532-8599
Last EDR Contact: 02/16/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Varies

US FIN ASSUR: Financial Assurance Information

All owners and operators of facilities that treat, store, or dispose of hazardous waste are required to provide proof that they will have sufficient funds to pay for the clean up, closure, and post-closure care of their facilities.

Date of Government Version: 01/11/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/02/2018
Number of Days to Update: 42
Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

EPA WATCH LIST: EPA WATCH LIST

EPA maintains a "Watch List" to facilitate dialogue between EPA, state and local environmental agencies on enforcement matters relating to facilities with alleged violations identified as either significant or high priority. Being on the Watch List does not mean that the facility has actually violated the law only that an investigation by EPA or a state or local environmental agency has led those organizations to allege that an unproven violation has in fact occurred. Being on the Watch List does not represent a higher level of concern regarding the alleged violations that were detected, but instead indicates cases requiring additional dialogue between EPA, state and local agencies - primarily because of the length of time the alleged violation has gone unaddressed or unresolved.

Date of Government Version: 08/30/2013
Date Data Arrived at EDR: 03/21/2014
Date Made Active in Reports: 06/17/2014
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 617-520-3000
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

2020 COR ACTION: 2020 Corrective Action Program List

The EPA has set ambitious goals for the RCRA Corrective Action program by creating the 2020 Corrective Action Universe. This RCRA cleanup baseline includes facilities expected to need corrective action. The 2020 universe contains a wide variety of sites. Some properties are heavily contaminated while others were contaminated but have since been cleaned up. Still others have not been fully investigated yet, and may require little or no remediation. Inclusion in the 2020 Universe does not necessarily imply failure on the part of a facility to meet its RCRA obligations.

Date of Government Version: 04/22/2013
Date Data Arrived at EDR: 03/03/2015
Date Made Active in Reports: 03/09/2015
Number of Days to Update: 6
Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 02/08/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

TSCA: Toxic Substances Control Act

Toxic Substances Control Act. TSCA identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory list. It includes data on the production volume of these substances by plant site.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 06/21/2017
Date Made Active in Reports: 01/05/2018
Number of Days to Update: 198
Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 03/23/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Every 4 Years

TRIS: Toxic Chemical Release Inventory System

Toxic Release Inventory System. TRIS identifies facilities which release toxic chemicals to the air, water and land in reportable quantities under SARA Title III Section 313.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 01/10/2018
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 2

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Annually

SSTS: Section 7 Tracking Systems

Section 7 of the Federal Insecticide, Fungicide and Rodenticide Act, as amended (92 Stat. 829) requires all registered pesticide-producing establishments to submit a report to the Environmental Protection Agency by March 1st each year. Each establishment must report the types and amounts of pesticides, active ingredients and devices being produced, and those having been produced and sold or distributed in the past year.

Date of Government Version: 12/31/2009
Date Data Arrived at EDR: 12/10/2010
Date Made Active in Reports: 02/25/2011
Number of Days to Update: 77

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 04/09/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Annually

ROD: Records Of Decision

Record of Decision. ROD documents mandate a permanent remedy at an NPL (Superfund) site containing technical and health information to aid in the cleanup.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/22/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 21

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 03/09/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Annually

RMP: Risk Management Plans

When Congress passed the Clean Air Act Amendments of 1990, it required EPA to publish regulations and guidance for chemical accident prevention at facilities using extremely hazardous substances. The Risk Management Program Rule (RMP Rule) was written to implement Section 112(r) of these amendments. The rule, which built upon existing industry codes and standards, requires companies of all sizes that use certain flammable and toxic substances to develop a Risk Management Program, which includes a(n): Hazard assessment that details the potential effects of an accidental release, an accident history of the last five years, and an evaluation of worst-case and alternative accidental releases; Prevention program that includes safety precautions and maintenance, monitoring, and employee training measures; and Emergency response program that spells out emergency health care, employee training measures and procedures for informing the public and response agencies (e.g the fire department) should an accident occur.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/08/2017
Number of Days to Update: 21

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 04/20/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RAATS: RCRA Administrative Action Tracking System

RCRA Administration Action Tracking System. RAATS contains records based on enforcement actions issued under RCRA pertaining to major violators and includes administrative and civil actions brought by the EPA. For administration actions after September 30, 1995, data entry in the RAATS database was discontinued. EPA will retain a copy of the database for historical records. It was necessary to terminate RAATS because a decrease in agency resources made it impossible to continue to update the information contained in the database.

Date of Government Version: 04/17/1995
Date Data Arrived at EDR: 07/03/1995
Date Made Active in Reports: 08/07/1995
Number of Days to Update: 35

Source: EPA
Telephone: 202-564-4104
Last EDR Contact: 06/02/2008
Next Scheduled EDR Contact: 09/01/2008
Data Release Frequency: No Update Planned

PRP: Potentially Responsible Parties
A listing of verified Potentially Responsible Parties

Date of Government Version: 10/25/2013
Date Data Arrived at EDR: 10/17/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 3
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 02/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

PADS: PCB Activity Database System
PCB Activity Database. PADS Identifies generators, transporters, commercial storers and/or brokers and disposers of PCB's who are required to notify the EPA of such activities.

Date of Government Version: 06/01/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 10/13/2017
Number of Days to Update: 126
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

ICIS: Integrated Compliance Information System
The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

Date of Government Version: 11/18/2016
Date Data Arrived at EDR: 11/23/2016
Date Made Active in Reports: 02/10/2017
Number of Days to Update: 79
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 04/09/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Quarterly

FTTS: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
FTTS tracks administrative cases and pesticide enforcement actions and compliance activities related to FIFRA, TSCA and EPCRA (Emergency Planning and Community Right-to-Know Act). To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA/Office of Prevention, Pesticides and Toxic Substances
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

FTTS INSP: FIFRA/ TSCA Tracking System - FIFRA (Federal Insecticide, Fungicide, & Rodenticide Act)/TSCA (Toxic Substances Control Act)
A listing of FIFRA/TSCA Tracking System (FTTS) inspections and enforcements.

Date of Government Version: 04/09/2009
Date Data Arrived at EDR: 04/16/2009
Date Made Active in Reports: 05/11/2009
Number of Days to Update: 25
Source: EPA
Telephone: 202-566-1667
Last EDR Contact: 08/18/2017
Next Scheduled EDR Contact: 12/04/2017
Data Release Frequency: Quarterly

MLTS: Material Licensing Tracking System
MLTS is maintained by the Nuclear Regulatory Commission and contains a list of approximately 8,100 sites which possess or use radioactive materials and which are subject to NRC licensing requirements. To maintain currency, EDR contacts the Agency on a quarterly basis.

Date of Government Version: 08/30/2016
Date Data Arrived at EDR: 09/08/2016
Date Made Active in Reports: 10/21/2016
Number of Days to Update: 43
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2005
Date Data Arrived at EDR: 08/07/2009
Date Made Active in Reports: 10/22/2009
Number of Days to Update: 76
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 03/09/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

COAL ASH EPA: Coal Combustion Residues Surface Impoundments List
A listing of coal combustion residues surface impoundments with high hazard potential ratings.

Date of Government Version: 07/01/2014
Date Data Arrived at EDR: 09/10/2014
Date Made Active in Reports: 10/20/2014
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

PCB TRANSFORMER: PCB Transformer Registration Database
The database of PCB transformer registrations that includes all PCB registration submittals.

Date of Government Version: 05/24/2017
Date Data Arrived at EDR: 11/30/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 15
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 01/26/2018
Next Scheduled EDR Contact: 05/07/2018
Data Release Frequency: Varies

RADINFO: Radiation Information Database
The Radiation Information Database (RADINFO) contains information about facilities that are regulated by U.S. Environmental Protection Agency (EPA) regulations for radiation and radioactivity.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 01/04/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 99
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

HIST FTTS: FIFRA/TSCA Tracking System Administrative Case Listing
A complete administrative case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40
Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2007
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

HIST FTTS INSP: FIFRA/TSCA Tracking System Inspection & Enforcement Case Listing
A complete inspection and enforcement case listing from the FIFRA/TSCA Tracking System (FTTS) for all ten EPA regions. The information was obtained from the National Compliance Database (NCDB). NCDB supports the implementation of FIFRA (Federal Insecticide, Fungicide, and Rodenticide Act) and TSCA (Toxic Substances Control Act). Some EPA regions are now closing out records. Because of that, and the fact that some EPA regions are not providing EPA Headquarters with updated records, it was decided to create a HIST FTTS database. It included records that may not be included in the newer FTTS database updates. This database is no longer updated.

Date of Government Version: 10/19/2006
Date Data Arrived at EDR: 03/01/2007
Date Made Active in Reports: 04/10/2007
Number of Days to Update: 40

Source: Environmental Protection Agency
Telephone: 202-564-2501
Last EDR Contact: 12/17/2008
Next Scheduled EDR Contact: 03/17/2008
Data Release Frequency: No Update Planned

DOT OPS: Incident and Accident Data

Department of Transporation, Office of Pipeline Safety Incident and Accident data.

Date of Government Version: 07/31/2012
Date Data Arrived at EDR: 08/07/2012
Date Made Active in Reports: 09/18/2012
Number of Days to Update: 42

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

CONSENT: Superfund (CERCLA) Consent Decrees

Major legal settlements that establish responsibility and standards for cleanup at NPL (Superfund) sites. Released periodically by United States District Courts after settlement by parties to litigation matters.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 79

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Varies

BRS: Biennial Reporting System

The Biennial Reporting System is a national system administered by the EPA that collects data on the generation and management of hazardous waste. BRS captures detailed data from two groups: Large Quantity Generators (LQG) and Treatment, Storage, and Disposal Facilities.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 09/28/2017
Number of Days to Update: 218

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Biennially

INDIAN RESERV: Indian Reservations

This map layer portrays Indian administered lands of the United States that have any area equal to or greater than 640 acres.

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 07/14/2015
Date Made Active in Reports: 01/10/2017
Number of Days to Update: 546

Source: USGS
Telephone: 202-208-3710
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

FUSRAP: Formerly Utilized Sites Remedial Action Program

DOE established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations.

Date of Government Version: 12/23/2016
Date Data Arrived at EDR: 12/27/2016
Date Made Active in Reports: 02/17/2017
Number of Days to Update: 52

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 01/19/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

UMTRA: Uranium Mill Tailings Sites

Uranium ore was mined by private companies for federal government use in national defense programs. When the mills shut down, large piles of the sand-like material (mill tailings) remain after uranium has been extracted from the ore. Levels of human exposure to radioactive materials from the piles are low; however, in some cases tailings were used as construction materials before the potential health hazards of the tailings were recognized.

Date of Government Version: 06/23/2017
Date Data Arrived at EDR: 10/11/2017
Date Made Active in Reports: 11/03/2017
Number of Days to Update: 23

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 03/02/2018
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Varies

LEAD SMELTER 2: Lead Smelter Sites

A list of several hundred sites in the U.S. where secondary lead smelting was done from 1931and 1964. These sites may pose a threat to public health through ingestion or inhalation of contaminated soil or dust

Date of Government Version: 04/05/2001
Date Data Arrived at EDR: 10/27/2010
Date Made Active in Reports: 12/02/2010
Number of Days to Update: 36

Source: American Journal of Public Health
Telephone: 703-305-6451
Last EDR Contact: 12/02/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

US AIRS (AFS): Aerometric Information Retrieval System Facility Subsystem (AFS)

The database is a sub-system of Aerometric Information Retrieval System (AIRS). AFS contains compliance data on air pollution point sources regulated by the U.S. EPA and/or state and local air regulatory agencies. This information comes from source reports by various stationary sources of air pollution, such as electric power plants, steel mills, factories, and universities, and provides information about the air pollutants they produce. Action, air program, air program pollutant, and general level plant data. It is used to track emissions and compliance data from industrial plants.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US AIRS MINOR: Air Facility System Data

A listing of minor source facilities.

Date of Government Version: 10/12/2016
Date Data Arrived at EDR: 10/26/2016
Date Made Active in Reports: 02/03/2017
Number of Days to Update: 100

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 09/26/2017
Next Scheduled EDR Contact: 01/08/2018
Data Release Frequency: Annually

US MINES: Mines Master Index File

Contains all mine identification numbers issued for mines active or opened since 1971. The data also includes violation information.

Date of Government Version: 10/29/2017
Date Data Arrived at EDR: 11/28/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 45

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Semi-Annually

US MINES 2: Ferrous and Nonferrous Metal Mines Database Listing

This map layer includes ferrous (ferrous metal mines are facilities that extract ferrous metals, such as iron ore or molybdenum) and nonferrous (Nonferrous metal mines are facilities that extract nonferrous metals, such as gold, silver, copper, zinc, and lead) metal mines in the United States.

Date of Government Version: 12/05/2005
Date Data Arrived at EDR: 02/29/2008
Date Made Active in Reports: 04/18/2008
Number of Days to Update: 49

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/02/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

US MINES 3: Active Mines & Mineral Plants Database Listing

Active Mines and Mineral Processing Plant operations for commodities monitored by the Minerals Information Team of the USGS.

Date of Government Version: 04/14/2011
Date Data Arrived at EDR: 06/08/2011
Date Made Active in Reports: 09/13/2011
Number of Days to Update: 97

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 03/02/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

ABANDONED MINES: Abandoned Mines

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by OSMRE to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). The inventory contains information on the location, type, and extent of AML impacts, as well as, information on the cost associated with the reclamation of those problems. The inventory is based upon field surveys by State, Tribal, and OSMRE program officials. It is dynamic to the extent that it is modified as new problems are identified and existing problems are reclaimed.

Date of Government Version: 12/20/2017
Date Data Arrived at EDR: 12/21/2017
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 92

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

FINDS: Facility Index System/Facility Registry System

Facility Index System. FINDS contains both facility information and 'pointers' to other sources that contain more detail. EDR includes the following FINDS databases in this report: PCS (Permit Compliance System), AIRS (Aerometric Information Retrieval System), DOCKET (Enforcement Docket used to manage and track information on civil judicial enforcement cases for all environmental statutes), FURS (Federal Underground Injection Control), C-DOCKET (Criminal Docket System used to track criminal enforcement actions for all environmental statutes), FFIS (Federal Facilities Information System), STATE (State Environmental Laws and Statutes), and PADS (PCB Activity Data System).

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 28

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 02/23/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 01/13/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 03/02/2018
Number of Days to Update: 42

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 09/30/2016
Date Data Arrived at EDR: 10/31/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 73

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/19/2018
Date Made Active in Reports: 04/13/2018
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 03/02/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

FUELS PROGRAM: EPA Fuels Program Registered Listing

This listing includes facilities that are registered under the Part 80 (Code of Federal Regulations) EPA Fuels Programs. All companies now are required to submit new and updated registrations.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 03/23/2018
Number of Days to Update: 30

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

CA BOND EXP. PLAN: Bond Expenditure Plan

Department of Health Services developed a site-specific expenditure plan as the basis for an appropriation of Hazardous Substance Cleanup Bond Act funds. It is not updated.

Date of Government Version: 01/01/1989
Date Data Arrived at EDR: 07/27/1994
Date Made Active in Reports: 08/02/1994
Number of Days to Update: 6

Source: Department of Health Services
Telephone: 916-255-2118
Last EDR Contact: 05/31/1994
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

CORTESE: "Cortese" Hazardous Waste & Substances Sites List

The sites for the list are designated by the State Water Resource Control Board (LUST), the Integrated Waste Board (SWF/LS), and the Department of Toxic Substances Control (Cal-Sites).

Date of Government Version: 02/08/2018
Date Data Arrived at EDR: 02/08/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 0

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 03/27/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

DRYCLEANERS: Cleaner Facilities

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial; garment pressing and cleaner's agents; linen supply; coin-operated laundries and cleaning; drycleaning plants, except rugs; carpet and upholster cleaning; industrial launderers; laundry and garment services.

Date of Government Version: 12/01/2017
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/16/2018
Number of Days to Update: 42

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Annually

EMI: Emissions Inventory Data

Toxics and criteria pollutant emissions data collected by the ARB and local air pollution agencies.

Date of Government Version: 12/31/2015
Date Data Arrived at EDR: 03/21/2017
Date Made Active in Reports: 08/15/2017
Number of Days to Update: 147

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 03/23/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Varies

ENF: Enforcement Action Listing

A listing of Water Board Enforcement Actions. Formal is everything except Oral/Verbal Communication, Notice of Violation, Expedited Payment Letter, and Staff Enforcement Letter.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 54

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 55

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Financial Assurance 2: Financial Assurance Information Listing

A listing of financial assurance information for solid waste facilities. Financial assurance is intended to ensure that resources are available to pay for the cost of closure, post-closure care, and corrective measures if the owner or operator of a regulated facility is unable or unwilling to pay.

Date of Government Version: 02/14/2018
Date Data Arrived at EDR: 02/16/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 46

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 02/08/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Varies

HAZNET: Facility and Manifest Data

Facility and Manifest Data. The data is extracted from the copies of hazardous waste manifests received each year by the DTSC. The annual volume of manifests is typically 700,000 - 1,000,000 annually, representing approximately 350,000 - 500,000 shipments. Data are from the manifests submitted without correction, and therefore many contain some invalid values for data elements such as generator ID, TSD ID, waste category, and disposal method. This database begins with calendar year 1993.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/12/2017
Date Made Active in Reports: 10/17/2017
Number of Days to Update: 97

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 04/12/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 41

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

HIST CORTESE: Hazardous Waste & Substance Site List

The sites for the list are designated by the State Water Resource Control Board [LUST], the Integrated Waste Board [SWF/LS], and the Department of Toxic Substances Control [CALSITES]. This listing is no longer updated by the state agency.

Date of Government Version: 04/01/2001
Date Data Arrived at EDR: 01/22/2009
Date Made Active in Reports: 04/08/2009
Number of Days to Update: 76

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 01/22/2009
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

HWP: EnviroStor Permitted Facilities Listing
Detailed information on permitted hazardous waste facilities and corrective action ("cleanups") tracked in EnviroStor.

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/21/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 41
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

HWT: Registered Hazardous Waste Transporter Database
A listing of hazardous waste transporters. In California, unless specifically exempted, it is unlawful for any person to transport hazardous wastes unless the person holds a valid registration issued by DTSC. A hazardous waste transporter registration is valid for one year and is assigned a unique registration number.

Date of Government Version: 01/08/2018
Date Data Arrived at EDR: 01/09/2018
Date Made Active in Reports: 02/06/2018
Number of Days to Update: 28
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Quarterly

MINES: Mines Site Location Listing
A listing of mine site locations from the Office of Mine Reclamation.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 31
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

MWMP: Medical Waste Management Program Listing
The Medical Waste Management Program (MWMP) ensures the proper handling and disposal of medical waste by permitting and inspecting medical waste Offsite Treatment Facilities (PDF) and Transfer Stations (PDF) throughout the state. MWMP also oversees all Medical Waste Transporters.

Date of Government Version: 02/27/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 42
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 02/14/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 29
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Quarterly

PEST LIC: Pesticide Regulation Licenses Listing
A listing of licenses and certificates issued by the Department of Pesticide Regulation. The DPR issues licenses and/or certificates to: Persons and businesses that apply or sell pesticides; Pest control dealers and brokers; Persons who advise on agricultural pesticide applications.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 04/19/2018
Number of Days to Update: 45
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 03/05/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/16/2018
Number of Days to Update: 35
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

NOTIFY 65: Proposition 65 Records
Listings of all Proposition 65 incidents reported to counties by the State Water Resources Control Board and the Regional Water Quality Control Board. This database is no longer updated by the reporting agency.

Date of Government Version: 12/14/2017
Date Data Arrived at EDR: 12/15/2017
Date Made Active in Reports: 01/16/2018
Number of Days to Update: 32
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: No Update Planned

UIC: UIC Listing
A listing of wells identified as underground injection wells, in the California Oil and Gas Wells database.

Date of Government Version: 12/11/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/17/2018
Number of Days to Update: 36
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Varies

WASTEWATER PITS: Oil Wastewater Pits Listing
Water officials discovered that oil producers have been dumping chemical-laden wastewater into hundreds of unlined pits that are operating without proper permits. Inspections completed by the Central Valley Regional Water Quality Control Board revealed the existence of previously unidentified waste sites. The water board?s review found that more than one-third of the region?s active disposal pits are operating without permission.

Date of Government Version: 04/15/2015
Date Data Arrived at EDR: 04/17/2015
Date Made Active in Reports: 06/23/2015
Number of Days to Update: 67
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 04/13/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Varies

WDS: Waste Discharge System
Sites which have been issued waste discharge requirements.

Date of Government Version: 06/19/2007
Date Data Arrived at EDR: 06/20/2007
Date Made Active in Reports: 06/29/2007
Number of Days to Update: 9
Source: State Water Resources Control Board
Telephone: 916-341-5227
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Quarterly

WIP: Well Investigation Program Case List
Well Investigation Program case in the San Gabriel and San Fernando Valley area.

Date of Government Version: 07/03/2009
Date Data Arrived at EDR: 07/21/2009
Date Made Active in Reports: 08/03/2009
Number of Days to Update: 13
Source: Los Angeles Water Quality Control Board
Telephone: 213-576-6726
Last EDR Contact: 03/21/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP: EDR Proprietary Manufactured Gas Plants

The EDR Proprietary Manufactured Gas Plant Database includes records of coal gas plants (manufactured gas plants) compiled by EDR's researchers. Manufactured gas sites were used in the United States from the 1800's to 1950's to produce a gas that could be distributed and used as fuel. These plants used whale oil, rosin, coal, or a mixture of coal, oil, and water that also produced a significant amount of waste. Many of the byproducts of the gas production, such as coal tar (oily waste containing volatile and non-volatile chemicals), sludges, oils and other compounds are potentially hazardous to human health and the environment. The byproduct from this process was frequently disposed of directly at the plant site and can remain or spread slowly, serving as a continuous source of soil and groundwater contamination.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: No Update Planned

EDR Hist Auto: EDR Exclusive Historical Auto Stations

EDR has searched selected national collections of business directories and has collected listings of potential gas station/filling station/service station sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include gas station/filling station/service station establishments. The categories reviewed included, but were not limited to gas, gas station, gasoline station, filling station, auto, automobile repair, auto service station, service station, etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR Hist Cleaner: EDR Exclusive Historical Cleaners

EDR has searched selected national collections of business directories and has collected listings of potential dry cleaner sites that were available to EDR researchers. EDR's review was limited to those categories of sources that might, in EDR's opinion, include dry cleaning establishments. The categories reviewed included, but were not limited to dry cleaners, cleaners, laundry, laundromat, cleaning/laundry, wash & dry etc. This database falls within a category of information EDR classifies as "High Risk Historical Records", or HRHR. EDR's HRHR effort presents unique and sometimes proprietary data about past sites and operations that typically create environmental concerns, but may not show up in current government records searches.

Date of Government Version: N/A
Date Data Arrived at EDR: N/A
Date Made Active in Reports: N/A
Number of Days to Update: N/A

Source: EDR, Inc.
Telephone: N/A
Last EDR Contact: N/A
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

EDR RECOVERED GOVERNMENT ARCHIVES

Exclusive Recovered Govt. Archives

RGA LF: Recovered Government Archive Solid Waste Facilities List

The EDR Recovered Government Archive Landfill database provides a list of landfills derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the Department of Resources Recycling and Recovery in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 01/13/2014
Number of Days to Update: 196

Source: Department of Resources Recycling and Recovery
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

RGA LUST: Recovered Government Archive Leaking Underground Storage Tank

The EDR Recovered Government Archive Leaking Underground Storage Tank database provides a list of LUST incidents derived from historical databases and includes many records that no longer appear in current government lists. Compiled from Records formerly available from the State Water Resources Control Board in California.

Date of Government Version: N/A
Date Data Arrived at EDR: 07/01/2013
Date Made Active in Reports: 12/30/2013
Number of Days to Update: 182

Source: State Water Resources Control Board
Telephone: N/A
Last EDR Contact: 06/01/2012
Next Scheduled EDR Contact: N/A
Data Release Frequency: Varies

COUNTY RECORDS

ALAMEDA COUNTY:

Contaminated Sites

A listing of contaminated sites overseen by the Toxic Release Program (oil and groundwater contamination from chemical releases and spills) and the Leaking Underground Storage Tank Program (soil and ground water contamination from leaking petroleum USTs).

Date of Government Version: 01/09/2018
Date Data Arrived at EDR: 01/11/2018
Date Made Active in Reports: 02/22/2018
Number of Days to Update: 42

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 63

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 04/24/2047
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA Facility List

Cupa Facility List

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 10

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA Facility Listing

Cupa facility list.

Date of Government Version: 04/21/2017
Date Data Arrived at EDR: 04/25/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 106

Source: Public Health Department
Telephone: 530-538-7149
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 01/25/2018
Date Data Arrived at EDR: 01/26/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 47

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 03/26/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 02/26/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 14

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 48

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA Facility List
Cupa Facility list

Date of Government Version: 01/05/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 40

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/08/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 39

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA Resources List

Certified Unified Program Agency. CUPA's are responsible for implementing a unified hazardous materials and hazardous waste management regulatory program. The agency provides oversight of businesses that deal with hazardous materials, operate underground storage tanks or aboveground storage tanks.

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/05/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 9

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Glenn County Air Pollution Control District
Telephone: 830-934-6500
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

HUMBOLDT COUNTY:

CUPA Facility List

CUPA facility list.

Date of Government Version: 08/03/2017
Date Data Arrived at EDR: 08/08/2017
Date Made Active in Reports: 10/16/2017
Number of Days to Update: 69

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 02/05/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA Facility List

Cupa facility list.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/26/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 47

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

INYO COUNTY:

CUPA Facility List
Cupa facility list.

Date of Government Version: 06/08/2017
Date Data Arrived at EDR: 06/09/2017
Date Made Active in Reports: 08/04/2017
Number of Days to Update: 56

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 03/28/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

KERN COUNTY:

Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 02/02/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 54

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 11/14/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/15/2017
Number of Days to Update: 28

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

LAKE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 02/06/2018
Date Data Arrived at EDR: 02/09/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 33

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 04/16/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 49

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

LOS ANGELES COUNTY:

San Gabriel Valley Areas of Concern
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office.

Date of Government Version: 03/30/2009
Date Data Arrived at EDR: 03/31/2009
Date Made Active in Reports: 10/23/2009
Number of Days to Update: 206
Source: EPA Region 9
Telephone: 415-972-3178
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: No Update Planned

HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 56
Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 01/16/2018
Date Data Arrived at EDR: 01/16/2018
Date Made Active in Reports: 02/14/2018
Number of Days to Update: 29
Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 04/17/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2017
Date Data Arrived at EDR: 04/21/2017
Date Made Active in Reports: 10/09/2017
Number of Days to Update: 171
Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 01/01/2018
Date Data Arrived at EDR: 01/17/2018
Date Made Active in Reports: 02/14/2018
Number of Days to Update: 28
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 04/17/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Annually

City of El Segundo Underground Storage Tank
Underground storage tank sites located in El Segundo city.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 04/19/2017
Date Made Active in Reports: 05/10/2017
Number of Days to Update: 21
Source: City of El Segundo Fire Department
Telephone: 310-524-2236
Last EDR Contact: 04/11/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Semi-Annually

City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 03/09/2017
Date Data Arrived at EDR: 03/10/2017
Date Made Active in Reports: 05/03/2017
Number of Days to Update: 54
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Annually

City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/05/2018
Date Made Active in Reports: 01/18/2018
Number of Days to Update: 13

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 04/05/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA Facility List
A listing of sites included in the county's Certified Unified Program Agency database. California's Secretary for Environmental Protection established the unified hazardous materials and hazardous waste regulatory program as required by chapter 6.11 of the California Health and Safety Code. The Unified Program consolidates the administration, permits, inspections, and enforcement activities.

Date of Government Version: 02/21/2018
Date Data Arrived at EDR: 02/22/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 40

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

MARIN COUNTY:

Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 01/02/2018
Date Data Arrived at EDR: 01/05/2018
Date Made Active in Reports: 01/17/2018
Number of Days to Update: 12

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 03/29/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Semi-Annually

MERCED COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 01/11/2018
Date Data Arrived at EDR: 01/12/2018
Date Made Active in Reports: 02/08/2018
Number of Days to Update: 27

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

MONO COUNTY:

CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 15

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Varies

MONTEREY COUNTY:

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 03/27/2018
Date Data Arrived at EDR: 03/29/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 18

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 02/20/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

NAPA COUNTY:

Sites With Reported Contamination
A listing of leaking underground storage tank sites located in Napa county.

Date of Government Version: 01/09/2017
Date Data Arrived at EDR: 01/11/2017
Date Made Active in Reports: 03/02/2017
Number of Days to Update: 50

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: No Update Planned

Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 02/22/2018
Date Data Arrived at EDR: 02/27/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 30

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA Facility List
CUPA facility list.

Date of Government Version: 01/31/2018
Date Data Arrived at EDR: 02/01/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 41

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

ORANGE COUNTY:

List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 02/05/2018
Date Data Arrived at EDR: 02/13/2018
Date Made Active in Reports: 04/03/2018
Number of Days to Update: 49

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Annually

List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 02/05/2018
Date Data Arrived at EDR: 02/13/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 35

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/05/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 01/02/2018
Date Data Arrived at EDR: 02/07/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 49

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 02/07/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

PLACER COUNTY:

Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 12/08/2017
Date Data Arrived at EDR: 12/12/2017
Date Made Active in Reports: 01/31/2018
Number of Days to Update: 50

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 03/15/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/24/2018
Date Made Active in Reports: 03/15/2018
Number of Days to Update: 50

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

RIVERSIDE COUNTY:

Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 01/18/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 56

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/19/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Quarterly

Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 01/18/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 03/28/2018
Number of Days to Update: 64

Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 03/19/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 01/03/2018
Date Made Active in Reports: 02/05/2018
Number of Days to Update: 33

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

Master Hazardous Materials Facility List

Any business that has hazardous materials on site - hazardous material storage sites, underground storage tanks, waste generators.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 01/03/2018
Date Made Active in Reports: 02/14/2018
Number of Days to Update: 42

Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 04/04/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 11/01/2017
Date Data Arrived at EDR: 11/03/2017
Date Made Active in Reports: 11/17/2017
Number of Days to Update: 14

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

Hazardous Material Permits

This listing includes underground storage tanks, medical waste handlers/generators, hazardous materials handlers, hazardous waste generators, and waste oil generators/handlers.

Date of Government Version: 11/30/2017
Date Data Arrived at EDR: 12/01/2017
Date Made Active in Reports: 01/16/2018
Number of Days to Update: 46

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 04/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

Hazardous Materials Management Division Database

The database includes: HE58 - This report contains the business name, site address, business phone number, establishment 'H' permit number, type of permit, and the business status. HE17 - In addition to providing the same information provided in the HE58 listing, HE17 provides inspection dates, violations received by the establishment, hazardous waste generated, the quantity, method of storage, treatment/disposal of waste and the hauler, and information on underground storage tanks. Unauthorized Release List - Includes a summary of environmental contamination cases in San Diego County (underground tank cases, non-tank cases, groundwater contamination, and soil contamination are included.)

Date of Government Version: 03/05/2018
Date Data Arrived at EDR: 03/07/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 40

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/31/2015
Date Data Arrived at EDR: 11/07/2015
Date Made Active in Reports: 01/04/2016
Number of Days to Update: 58
Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

Environmental Case Listing
The listing contains all underground tank release cases and projects pertaining to properties contaminated with hazardous substances that are actively under review by the Site Assessment and Mitigation Program.

Date of Government Version: 03/23/2010
Date Data Arrived at EDR: 06/15/2010
Date Made Active in Reports: 07/09/2010
Number of Days to Update: 24
Source: San Diego County Department of Environmental Health
Telephone: 619-338-2371
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

Local Oversite Facilities
A listing of leaking underground storage tank sites located in San Francisco county.

Date of Government Version: 09/19/2008
Date Data Arrived at EDR: 09/19/2008
Date Made Active in Reports: 09/29/2008
Number of Days to Update: 10
Source: Department Of Public Health San Francisco County
Telephone: 415-252-3920
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 11/02/2017
Date Data Arrived at EDR: 11/07/2017
Date Made Active in Reports: 12/19/2017
Number of Days to Update: 42
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 04/02/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 12/20/2017
Date Data Arrived at EDR: 12/21/2017
Date Made Active in Reports: 02/01/2018
Number of Days to Update: 42
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 07/02/2018
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 11/16/2017
Date Data Arrived at EDR: 11/17/2017
Date Made Active in Reports: 12/18/2017
Number of Days to Update: 31
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SAN MATEO COUNTY:

Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 12/12/2017
Date Data Arrived at EDR: 12/14/2017
Date Made Active in Reports: 01/11/2018
Number of Days to Update: 28
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Annually

Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/23/2018
Date Made Active in Reports: 04/11/2018
Number of Days to Update: 78
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 03/07/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA Facility Listing
CUPA Program Listing from the Environmental Health Services division.

Date of Government Version: 09/08/2011
Date Data Arrived at EDR: 09/09/2011
Date Made Active in Reports: 10/07/2011
Number of Days to Update: 28
Source: Santa Barbara County Public Health Department
Telephone: 805-686-8167
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SANTA CLARA COUNTY:

Cupa Facility List
Cupa facility list

Date of Government Version: 02/20/2018
Date Data Arrived at EDR: 02/20/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 27
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

HIST LUST - Fuel Leak Site Activity Report
A listing of open and closed leaking underground storage tanks. This listing is no longer updated by the county. Leaking underground storage tanks are now handled by the Department of Environmental Health.

Date of Government Version: 03/29/2005
Date Data Arrived at EDR: 03/30/2005
Date Made Active in Reports: 04/21/2005
Number of Days to Update: 22
Source: Santa Clara Valley Water District
Telephone: 408-265-2600
Last EDR Contact: 03/23/2009
Next Scheduled EDR Contact: 06/22/2009
Data Release Frequency: No Update Planned

LOP Listing
A listing of leaking underground storage tanks located in Santa Clara county.

Date of Government Version: 03/03/2014
Date Data Arrived at EDR: 03/05/2014
Date Made Active in Reports: 03/18/2014
Number of Days to Update: 13
Source: Department of Environmental Health
Telephone: 408-918-3417
Last EDR Contact: 02/22/2018
Next Scheduled EDR Contact: 06/11/2018
Data Release Frequency: Annually

Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 02/04/2018
Date Data Arrived at EDR: 02/06/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 42

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA Facility List
CUPA facility listing.

Date of Government Version: 01/21/2017
Date Data Arrived at EDR: 02/22/2017
Date Made Active in Reports: 05/23/2017
Number of Days to Update: 90

Source: Santa Cruz County Environmental Health
Telephone: 831-464-2761
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA Facility List
Cupa Facility List.

Date of Government Version: 06/15/2017
Date Data Arrived at EDR: 06/19/2017
Date Made Active in Reports: 08/09/2017
Number of Days to Update: 51

Source: Shasta County Department of Resource Management
Telephone: 530-225-5789
Last EDR Contact: 02/15/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Varies

SOLANO COUNTY:

Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 12/14/2017
Date Data Arrived at EDR: 12/15/2017
Date Made Active in Reports: 01/12/2018
Number of Days to Update: 28

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/08/2018
Date Data Arrived at EDR: 03/13/2018
Date Made Active in Reports: 03/29/2018
Number of Days to Update: 16

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Quarterly

SONOMA COUNTY:

Cupa Facility List
Cupa Facility list

Date of Government Version: 03/01/2018
Date Data Arrived at EDR: 03/27/2018
Date Made Active in Reports: 04/16/2018
Number of Days to Update: 20

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 03/22/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Varies

Leaking Underground Storage Tank Sites

A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 01/04/2018
Date Data Arrived at EDR: 01/09/2018
Date Made Active in Reports: 02/06/2018
Number of Days to Update: 28

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 03/22/2018
Next Scheduled EDR Contact: 07/09/2018
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 02/06/2018
Date Data Arrived at EDR: 02/07/2018
Date Made Active in Reports: 03/16/2018
Number of Days to Update: 37

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 04/16/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Varies

SUTTER COUNTY:

Underground Storage Tanks

Underground storage tank sites located in Sutter county.

Date of Government Version: 01/08/2018
Date Data Arrived at EDR: 03/01/2018
Date Made Active in Reports: 03/30/2018
Number of Days to Update: 29

Source: Sutter County Department of Agriculture
Telephone: 530-822-7500
Last EDR Contact: 02/28/2018
Next Scheduled EDR Contact: 06/18/2018
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA Facility List

Cupa facilities

Date of Government Version: 01/26/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 47

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 02/01/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA Facility List

Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/19/2018
Number of Days to Update: 53

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

TULARE COUNTY:

CUPA Facility List
Cupa program facilities

Date of Government Version: 03/19/2018
Date Data Arrived at EDR: 03/22/2018
Date Made Active in Reports: 04/17/2018
Number of Days to Update: 26

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 03/06/2018
Next Scheduled EDR Contact: 05/21/2018
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA Facility List
Cupa facility list

Date of Government Version: 01/22/2018
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/16/2018
Number of Days to Update: 50

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 04/18/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Varies

VENTURA COUNTY:

Business Plan, Hazardous Waste Producers, and Operating Underground Tanks
The BWT list indicates by site address whether the Environmental Health Division has Business Plan (B), Waste Producer (W), and/or Underground Tank (T) information.

Date of Government Version: 12/26/2017
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/14/2018
Number of Days to Update: 48

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Inventory of Illegal Abandoned and Inactive Sites
Ventura County Inventory of Closed, Illegal Abandoned, and Inactive Sites.

Date of Government Version: 12/01/2011
Date Data Arrived at EDR: 12/01/2011
Date Made Active in Reports: 01/19/2012
Number of Days to Update: 49

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/29/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Annually

Listing of Underground Tank Cleanup Sites
Ventura County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 05/29/2008
Date Data Arrived at EDR: 06/24/2008
Date Made Active in Reports: 07/31/2008
Number of Days to Update: 37

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 02/08/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: Quarterly

Medical Waste Program List
To protect public health and safety and the environment from potential exposure to disease causing agents, the Environmental Health Division Medical Waste Program regulates the generation, handling, storage, treatment and disposal of medical waste throughout the County.

Date of Government Version: 12/26/2017
Date Data Arrived at EDR: 01/25/2018
Date Made Active in Reports: 03/20/2018
Number of Days to Update: 54

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 08/06/2018
Data Release Frequency: Quarterly

Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 02/28/2018
Date Data Arrived at EDR: 03/14/2018
Date Made Active in Reports: 03/30/2018
Number of Days to Update: 16
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 03/14/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Quarterly

YOLO COUNTY:

Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 01/02/2018
Date Data Arrived at EDR: 01/09/2018
Date Made Active in Reports: 01/19/2018
Number of Days to Update: 10
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 03/29/2018
Next Scheduled EDR Contact: 07/16/2018
Data Release Frequency: Annually

YUBA COUNTY:

CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 02/01/2018
Date Data Arrived at EDR: 02/02/2018
Date Made Active in Reports: 03/21/2018
Number of Days to Update: 47
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 01/29/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Varies

OTHER DATABASE(S)

Depending on the geographic area covered by this report, the data provided in these specialty databases may or may not be complete. For example, the existence of wetlands information data in a specific report does not mean that all wetlands in the area covered by the report are included. Moreover, the absence of any reported wetlands information does not necessarily mean that wetlands do not exist in the area covered by the report.

CT MANIFEST: Hazardous Waste Manifest Data
Facility and manifest data. Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a tsd facility.

Date of Government Version: 01/03/2018
Date Data Arrived at EDR: 02/14/2018
Date Made Active in Reports: 03/22/2018
Number of Days to Update: 36
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 02/14/2018
Next Scheduled EDR Contact: 05/28/2018
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/11/2017
Date Made Active in Reports: 07/27/2017
Number of Days to Update: 107
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 04/23/2018
Next Scheduled EDR Contact: 07/23/2018
Data Release Frequency: Annually

NY MANIFEST: Facility and Manifest Data
Manifest is a document that lists and tracks hazardous waste from the generator through transporters to a TSD facility.

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 01/31/2018
Date Made Active in Reports: 03/09/2018
Number of Days to Update: 37

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 01/31/2018
Next Scheduled EDR Contact: 05/14/2018
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 07/25/2017
Date Made Active in Reports: 09/25/2017
Number of Days to Update: 62

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 04/12/2018
Next Scheduled EDR Contact: 07/30/2018
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2017
Date Data Arrived at EDR: 02/23/2018
Date Made Active in Reports: 04/09/2018
Number of Days to Update: 45

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 02/21/2018
Next Scheduled EDR Contact: 06/04/2018
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2016
Date Data Arrived at EDR: 04/13/2017
Date Made Active in Reports: 07/14/2017
Number of Days to Update: 92

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 03/08/2018
Next Scheduled EDR Contact: 06/25/2018
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: PennWell Corporation
Petroleum Bundle (Crude Oil, Refined Products, Petrochemicals, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)) N = Natural Gas Bundle (Natural Gas, Gas Liquids (LPG/NGL), and Specialty Gases (Miscellaneous)). This map includes information copyrighted by PennWell Corporation. This information is provided on a best effort basis and PennWell Corporation does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of PennWell.

Electric Power Transmission Line Data
Source: PennWell Corporation
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Sensitive Receptors: There are individuals deemed sensitive receptors due to their fragile immune systems and special sensitivity to environmental discharges. These sensitive receptors typically include the elderly, the sick, and children. While the location of all sensitive receptors cannot be determined, EDR indicates those buildings and facilities - schools, daycares, hospitals, medical centers, and nursing homes - where individuals who are sensitive receptors are likely to be located.

AHA Hospitals:
Source: American Hospital Association, Inc.
Telephone: 312-280-5991
The database includes a listing of hospitals based on the American Hospital Association's annual survey of hospitals.

Medical Centers: Provider of Services Listing
Source: Centers for Medicare & Medicaid Services
Telephone: 410-786-3000
A listing of hospitals with Medicare provider number, produced by Centers of Medicare & Medicaid Services, a federal agency within the U.S. Department of Health and Human Services.

Nursing Homes
Source: National Institutes of Health
Telephone: 301-594-6248
Information on Medicare and Medicaid certified nursing homes in the United States.

Public Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on elementary and secondary public education in the United States. It is a comprehensive, annual, national statistical database of all public elementary and secondary schools and school districts, which contains data that are comparable across all states.

Private Schools
Source: National Center for Education Statistics
Telephone: 202-502-7300
The National Center for Education Statistics' primary database on private school locations in the United States.

Daycare Centers: Licensed Facilities
Source: Department of Social Services
Telephone: 916-657-4041

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

STREET AND ADDRESS INFORMATION

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GEOCHECK ®- PHYSICAL SETTING SOURCE ADDENDUM

TARGET PROPERTY ADDRESS

MOTTE RANCON DISTRIBUTION CENTER
26340 TRUMBLE ROAD
ROMOLAND, CA 92585

TARGET PROPERTY COORDINATES

Latitude (North):	33.738899 - 33° 44' 20.04''
Longitude (West):	117.183679 - 117° 11' 1.24''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	482985.5
UTM Y (Meters):	3733027.8
Elevation:	1431 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	5641314 ROMOLAND, CA
Version Date:	2012
North Map:	5641330 PERRIS, CA
Version Date:	2012

EDR's GeoCheck Physical Setting Source Addendum is provided to assist the environmental professional in forming an opinion about the impact of potential contaminant migration.

Assessment of the impact of contaminant migration generally has two principal investigative components:

1. Groundwater flow direction, and
2. Groundwater flow velocity.

Groundwater flow direction may be impacted by surface topography, hydrology, hydrogeology, characteristics of the soil, and nearby wells. Groundwater flow velocity is generally impacted by the nature of the geologic strata.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW DIRECTION INFORMATION

Groundwater flow direction for a particular site is best determined by a qualified environmental professional using site-specific well data. If such data is not reasonably ascertainable, it may be necessary to rely on other sources of information, such as surface topographic information, hydrologic information, hydrogeologic data collected on nearby properties, and regional groundwater flow information (from deep aquifers).

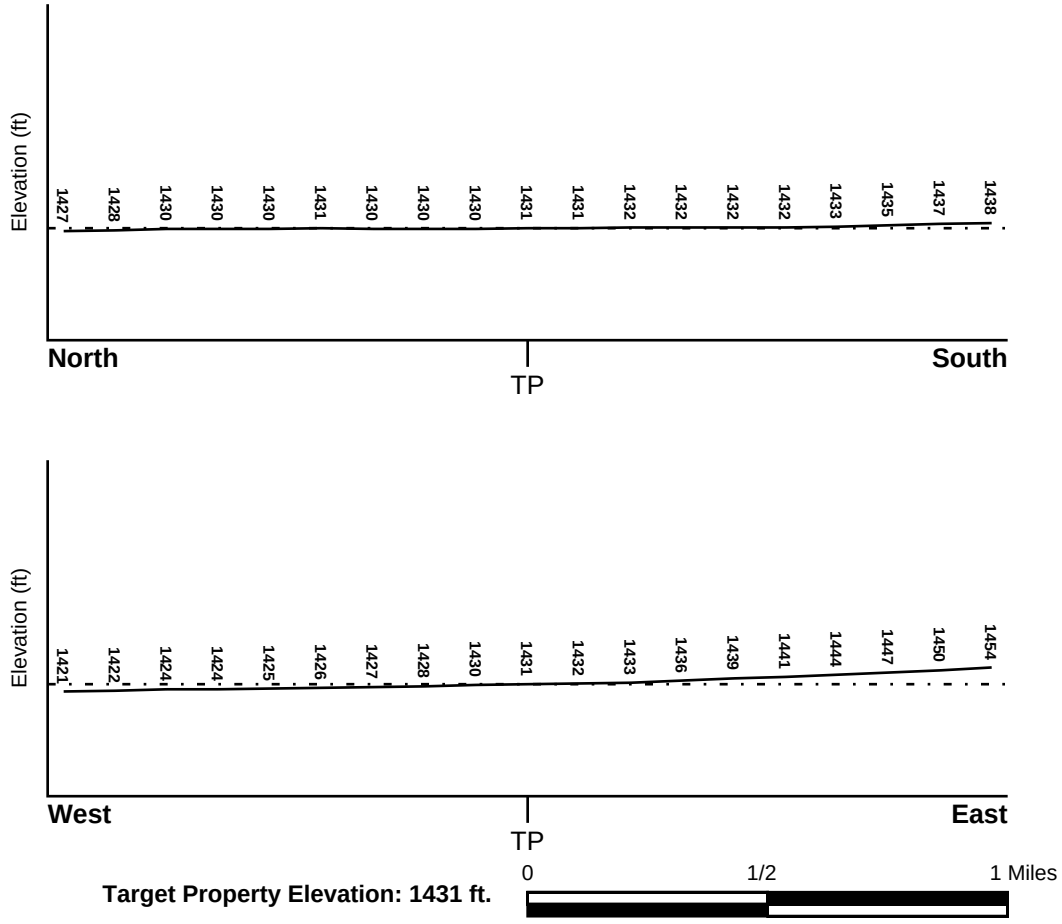
TOPOGRAPHIC INFORMATION

Surface topography may be indicative of the direction of surficial groundwater flow. This information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

TARGET PROPERTY TOPOGRAPHY

General Topographic Gradient: General West

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1431 ft.

Source: Topography has been determined from the USGS 7.5' Digital Elevation Model and should be evaluated on a relative (not an absolute) basis. Relative elevation information between sites of close proximity should be field verified.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

HYDROLOGIC INFORMATION

Surface water can act as a hydrologic barrier to groundwater flow. Such hydrologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Refer to the Physical Setting Source Map following this summary for hydrologic information (major waterways and bodies of water).

FEMA FLOOD ZONE

Flood Plain Panel at Target Property	FEMA Source Type
06065C2060H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1440H	FEMA FIRM Flood data
06065C1445H	FEMA FIRM Flood data
06065C2055H	FEMA FIRM Flood data

NATIONAL WETLAND INVENTORY

NWI Quad at Target Property	NWI Electronic Data Coverage
NOT AVAILABLE	YES - refer to the Overview Map and Detail Map

HYDROGEOLOGIC INFORMATION

Hydrogeologic information obtained by installation of wells on a specific site can often be an indicator of groundwater flow direction in the immediate area. Such hydrogeologic information can be used to assist the environmental professional in forming an opinion about the impact of nearby contaminated properties or, should contamination exist on the target property, what downgradient sites might be impacted.

Site-Specific Hydrogeological Data*:

Search Radius:	1.25 miles
Status:	Not found

AQUIFLOW®

Search Radius: 1.000 Mile.

EDR has developed the AQUIFLOW Information System to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted by environmental professionals to regulatory authorities at select sites and has extracted the date of the report, groundwater flow direction as determined hydrogeologically, and the depth to water table.

MAP ID	LOCATION FROM TP	GENERAL DIRECTION GROUNDWATER FLOW
Not Reported		

* ©1996 Site−specific hydrogeological data gathered by CERCLIS Alerts, Inc., Bainbridge Island, WA. All rights reserved. All of the information and opinions presented are those of the cited EPA report(s), which were completed under a Comprehensive Environmental Response Compensation and Liability Information System (CERCLIS) investigation.

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

GROUNDWATER FLOW VELOCITY INFORMATION

Groundwater flow velocity information for a particular site is best determined by a qualified environmental professional using site specific geologic and soil strata data. If such data are not reasonably ascertainable, it may be necessary to rely on other sources of information, including geologic age identification, rock stratigraphic unit and soil characteristics data collected on nearby properties and regional soil information. In general, contaminant plumes move more quickly through sandy-gravelly types of soils than silty-clayey types of soils.

GEOLOGIC INFORMATION IN GENERAL AREA OF TARGET PROPERTY

Geologic information can be used by the environmental professional in forming an opinion about the relative speed at which contaminant migration may be occurring.

ROCK STRATIGRAPHIC UNIT

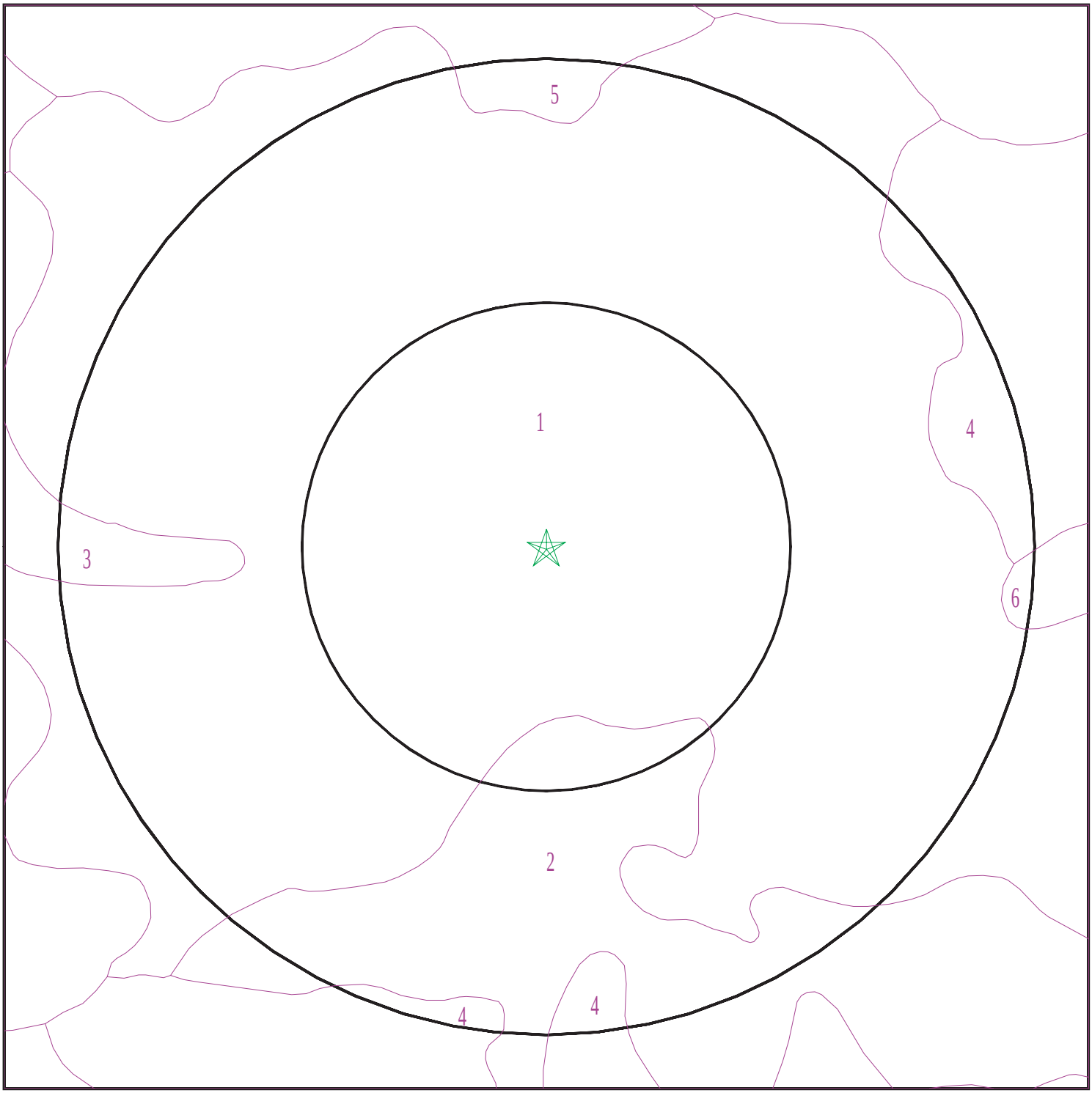
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

GEOLOGIC AGE IDENTIFICATION

Category: Plutonic and Intrusive Rocks

Geologic Age and Rock Stratigraphic Unit Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - a digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

SSURGO SOIL MAP - 5269785.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
LAT/LONG:	33.738899 / 117.183679	INQUIRY #:	5269785.2s
		DATE:	April 24, 2018 1:31 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

DOMINANT SOIL COMPOSITION IN GENERAL AREA OF TARGET PROPERTY

The U.S. Department of Agriculture's (USDA) Soil Conservation Service (SCS) leads the National Cooperative Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. The following information is based on Soil Conservation Service SSURGO data.

Soil Map ID: 1

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	27 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	27 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 2

Soil Component Name: GREENFIELD

Soil Surface Texture: sandy loam

Hydrologic Group: Class B - Moderate infiltration rates. Deep and moderately deep, moderately well and well drained soils with moderately coarse textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	25 inches	sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
2	25 inches	42 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.8 Min: 6.1
3	42 inches	59 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 14 Min: 4	Max: 7.8 Min: 6.1
4	59 inches	72 inches	stratified loamy sand to sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 3

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.6
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
3	37 inches	50 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 4

Soil Component Name: EXETER

Soil Surface Texture: sandy loam

Hydrologic Group: Class C - Slow infiltration rates. Soils with layers impeding downward movement of water, or soils with moderately fine or fine textures.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: High

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	16 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Clayey sand. COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.6
2	16 inches	37 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 14 Min: 4	Max: 7.8 Min: 6.6
3	37 inches	50 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	50 inches	59 inches	stratified sandy loam to silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Map ID: 5

Soil Component Name: MADERA

Soil Surface Texture: fine sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Moderately well drained

Hydric Status: Partially hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	18 inches	fine sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 42 Min: 14	Max: 7.3 Min: 5.6
2	18 inches	25 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit 50% or more), Fat Clay.	Max: 0.42 Min: 0.01	Max: 8.4 Min: 6.6
3	25 inches	37 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	37 inches	61 inches	stratified coarse sandy loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay. FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 1.4 Min: 0.42	Max: 8.4 Min: 7.4

Soil Map ID: 6

Soil Component Name: MONSERATE

Soil Surface Texture: sandy loam

Hydrologic Group: Class D - Very slow infiltration rates. Soils are clayey, have a high water table, or are shallow to an impervious layer.

Soil Drainage Class: Well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Low

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

Soil Layer Information

	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
1	0 inches	9 inches	sandy loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 7.3 Min: 6.1
2	9 inches	18 inches	sandy clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 7.3 Min: 6.1
3	18 inches	44 inches	indurated	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
4	44 inches	57 inches	cemented	Not reported	Not reported	Max: 0.01 Min: 0	Max: Min:
5	57 inches	70 inches	loamy coarse sand	Granular materials (35 pct. or less passing No. 200), Stone Fragments, Gravel and Sand.	COARSE-GRAINED SOILS, Sands, Sands with fines, Silty Sand.	Max: 14 Min: 4	Max: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

LOCAL / REGIONAL WATER AGENCY RECORDS

EDR Local/Regional Water Agency records provide water well information to assist the environmental professional in assessing sources that may impact ground water flow direction, and in forming an opinion about the impact of contaminant migration on nearby drinking water wells.

WELL SEARCH DISTANCE INFORMATION

DATABASE	SEARCH DISTANCE (miles)
Federal USGS	1.000
Federal FRDS PWS	Nearest PWS within 1 mile
State Database	1.000

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
1	USGS40000137613	1/4 - 1/2 Mile South
A3	USGS40000137651	1/4 - 1/2 Mile ESE
B4	USGS40000137824	1/2 - 1 Mile North
C6	USGS40000137523	1/2 - 1 Mile South
D9	USGS40000137576	1/2 - 1 Mile SE
C10	USGS40000137518	1/2 - 1 Mile South
E12	USGS40000137850	1/2 - 1 Mile NNW
F15	USGS40000137861	1/2 - 1 Mile NNW
G18	USGS40000137582	1/2 - 1 Mile WSW
19	USGS40000137841	1/2 - 1 Mile NE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

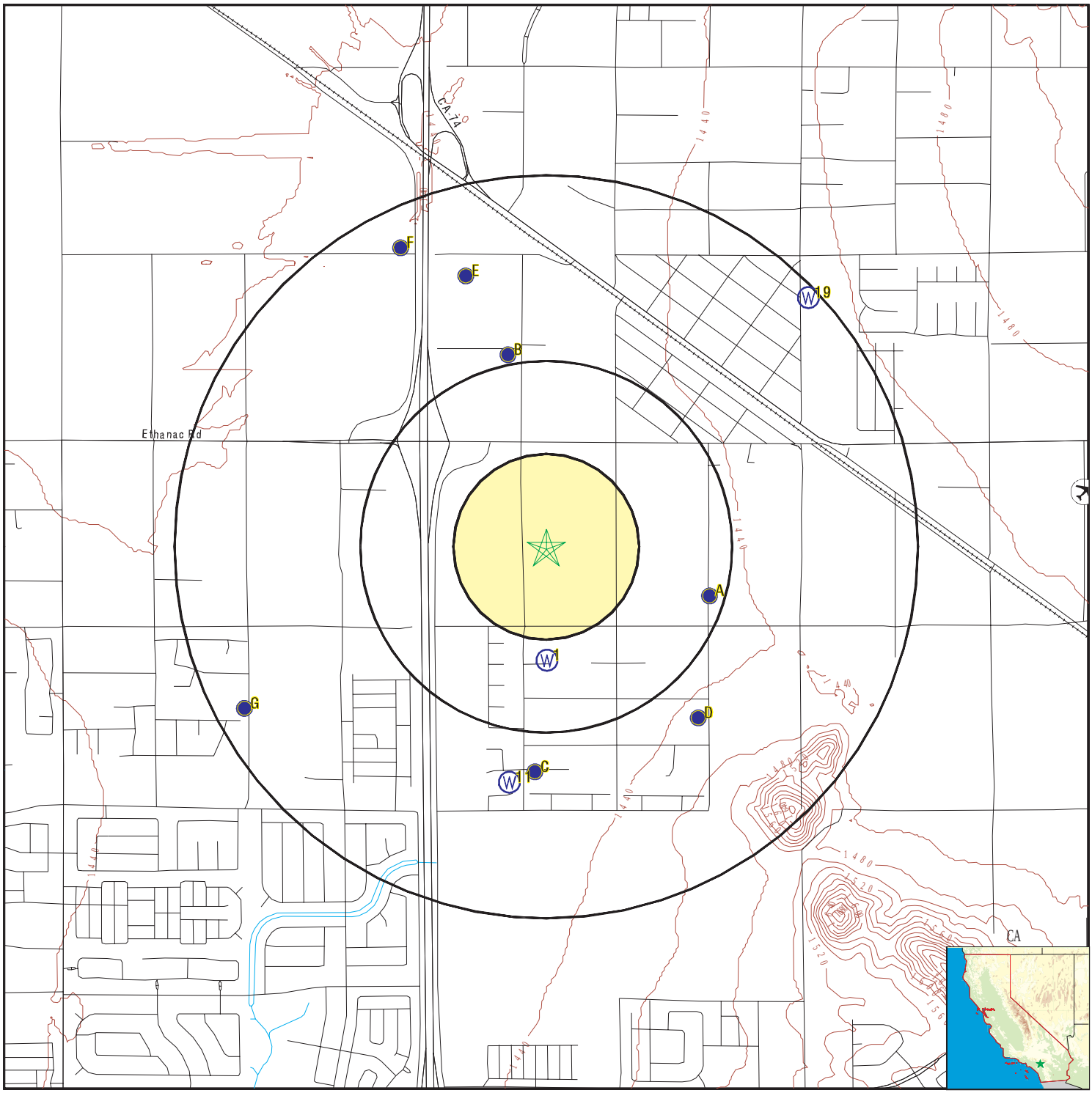
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADW60000007754	1/4 - 1/2 Mile ESE
B5	CADW60000020473	1/2 - 1 Mile NNW
C7	CADW60000020478	1/2 - 1 Mile South
D8	CADW60000007755	1/2 - 1 Mile SE
11	CADW60000020477	1/2 - 1 Mile South
E13	CADW60000020472	1/2 - 1 Mile NNW
F14	CADW60000006162	1/2 - 1 Mile NNW
F16	CADW60000020470	1/2 - 1 Mile NNW
G17	CADW60000006165	1/2 - 1 Mile WSW

PHYSICAL SETTING SOURCE MAP - 5269785.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- Airports
- Earthquake epicenter, Richter 5 or greater
- Water Wells
- Public Water Supply Wells
- Cluster of Multiple Icons

- Groundwater Flow Direction
- GI Indeterminate Groundwater Flow at Location
- GV Groundwater Flow Varies at Location
- HD Closest Hydrogeological Data
- Oil, gas or related wells

SITE NAME:	Motte Rancon Distribution Center	CLIENT:	Rainwater Consulting
ADDRESS:	26340 Trumble Road ROMOLAND CA 92585	CONTACT:	Tim Doyle
		INQUIRY #:	5269785.2s
LAT/LONG:	33.738899 / 117.183679	DATE:	April 24, 2018 1:31 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
South **FED USGS** **USGS40000137613**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334404117105801		
Monloc name:	005S003W15L001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7344649
Longitude:	-117.1836449	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1429
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19941015	Welldepth:	150
Welldepth units:	ft	Wellholedepth:	150
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

A2
ESE **CA WELLS** **CADW60000007754**
1/4 - 1/2 Mile
Higher

Objectid:	7754
Latitude:	33.737
Longitude:	-117.1765
Site code:	337370N1171765W001
State well numbe:	05S03W15H001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000007754

A3
ESE **FED USGS** **USGS40000137651**
1/4 - 1/2 Mile
Higher

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334413117102901		
Monloc name:	005S003W15H001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7369648
Longitude:	-117.175589	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1435
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	220
Welldepth units:	ft	Wellholedepth:	220
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-05-05	101.32		1993-11-19	110.20	

B4
North
1/2 - 1 Mile
Lower

FED USGS **USGS40000137824**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334447117110301		
Monloc name:	005S003W10N001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.746409
Longitude:	-117.185034	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1425
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 2

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-09-13	95.63		1995-06-02	97.98	

B5
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000020473**

Objectid:	20473
Latitude:	33.7464
Longitude:	-117.1859
Site code:	337464N1171859W001
State well numbe:	05S03W10N001S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020473

C6
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000137523**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334349117105801		
Monloc name:	005S003W15P002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7302983
Longitude:	-117.1836449	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1429
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19941001	Welldepth:	160
Welldepth units:	ft	Wellholedepth:	160
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1994-10-02	32	

C7
South
1/2 - 1 Mile
Higher

CA WELLS **CADW60000020478**

Objectid:	20478
Latitude:	33.7303
Longitude:	-117.1845
Site code:	337303N1171845W001
State well numbe:	05S03W15P002S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020478

D8
SE
1/2 - 1 Mile
Higher

CA WELLS **CADW60000007755**

Objectid:	7755
Latitude:	33.7322
Longitude:	-117.177
Site code:	337322N1171770W001
State well numbe:	05S03W15Q001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000007755

D9
SE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137576**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334356117103101		
Monloc name:	005S003W15Q001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7322428
Longitude:	-117.1761446	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1439
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19910404	Welldepth:	380
Welldepth units:	ft	Wellholedepth:	380
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1995-05-22	33.49	

C10
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000137518**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334347117110101		
Monloc name:	005S003W15P001S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7297428
Longitude:	-117.1844783	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1428
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	19910709	Welldepth:	185
Welldepth units:	ft	Wellholedepth:	185
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1995-06-06	86.38	

11
South
1/2 - 1 Mile
Higher

CA WELLS **CADW60000020477**

Objectid:	20477
Latitude:	33.7297
Longitude:	-117.1854
Site code:	337297N1171854W001
State well numbe:	05S03W15P001S
Local well name:	''
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020477

E12
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000137850**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334458117111001		
Monloc name:	005S003W10M002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7494644
Longitude:	-117.1869785	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1422
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		

Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	333.7
Welldepth units:	ft	Wellholedepth:	Not Reported
Wellholedepth units:	Not Reported		

Ground-water levels, Number of Measurements: 1

Date	Feet below Surface	Feet to Sealevel
1995-05-05	96.22	

E13
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000020472**

Objectid:	20472
Latitude:	33.7495
Longitude:	-117.1879
Site code:	337495N1171879W001
State well numbe:	05S03W10M002S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020472

F14
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000006162**

Objectid:	6162
Latitude:	33.750569
Longitude:	-117.189934
Site code:	337506N1171899W001
State well numbe:	Not Reported
Local well name:	’EMWD12744’
Well use id:	1
Well use descrip:	Observation
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000006162

F15
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000137861**

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334502117112201		
Monloc name:	005S003W09H002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7505755
Longitude:	-117.190312	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1420
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	19930920	Welldepth:	250.6
Welldepth units:	ft	Wellholedepth:	260
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 3

Date	Feet below Surface	Feet to Sealevel	Date	Feet below Surface	Feet to Sealevel
1995-09-13	93.60		1995-06-26	96.28	
1995-04-13	96.00				

F16
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000020470**

Objectid:	20470
Latitude:	33.7506
Longitude:	-117.1912
Site code:	337506N1171912W001
State well numbe:	05S03W09H002S
Local well name:	’’
Well use id:	6
Well use descrip:	Unknown
County id:	33
County name:	Riverside
Basin code:	’8-5’
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000020470

G17
WSW
1/2 - 1 Mile
Lower

CA WELLS **CADW60000006165**

Objectid:	6165
Latitude:	33.732663
Longitude:	-117.197747
Site code:	337327N1171977W001
State well numbe:	Not Reported
Local well name:	'EMWD12765'
Well use id:	1
Well use descrip:	Observation
County id:	33
County name:	Riverside
Basin code:	'8-5'
Basin desc:	San Jacinto
Dwr region id:	80238
Dwr region:	Southern Region Office
Site id:	CADW60000006165

G18
WSW **FED USGS** **USGS40000137582**
1/2 - 1 Mile
Lower

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334357117114901		
Monloc name:	005S003W16P002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7325205
Longitude:	-117.1978123	Sourcemap scale:	24000
Horiz Acc measure:	5	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1425
Vert measure units:	feet	Vertacc measure val:	5
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	1971	Welldepth:	Not Reported
Welldepth units:	Not Reported	Wellholedepth:	568
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

19
NE **FED USGS** **USGS40000137841**
1/2 - 1 Mile
Higher

Org. Identifier:	USGS-CA		
Formal name:	USGS California Water Science Center		
Monloc Identifier:	USGS-334455117101401		
Monloc name:	005S003W11M002S		
Monloc type:	Well		
Monloc desc:	Not Reported		
Huc code:	18070202	Drainagearea value:	Not Reported
Drainagearea Units:	Not Reported	Contrib drainagearea:	Not Reported
Contrib drainagearea units:	Not Reported	Latitude:	33.7486312
Longitude:	-117.1714222	Sourcemap scale:	24000

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Horiz Acc measure:	1	Horiz Acc measure units:	seconds
Horiz Collection method:	Interpolated from map		
Horiz coord refsys:	NAD83	Vert measure val:	1451
Vert measure units:	feet	Vertacc measure val:	10
Vert accmeasure units:	feet		
Vertcollection method:	Interpolated from topographic map		
Vert coord refsys:	NGVD29	Countrycode:	US
Aquifername:	California Coastal Basin aquifers		
Formation type:	Not Reported		
Aquifer type:	Not Reported		
Construction date:	Not Reported	Welldepth:	787
Welldepth units:	ft	Wellholedepth:	787
Wellholedepth units:	ft		

Ground-water levels, Number of Measurements: 0

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS
RADON

AREA RADON INFORMATION

State Database: CA Radon

Radon Test Results

Zipcode	Num Tests	> 4 pCi/L
92585	6	0

Federal EPA Radon Zone for RIVERSIDE County: 2

Note: Zone 1 indoor average level > 4 pCi/L.
: Zone 2 indoor average level >= 2 pCi/L and <= 4 pCi/L.
: Zone 3 indoor average level < 2 pCi/L.

Federal Area Radon Information for RIVERSIDE COUNTY, CA

Number of sites tested: 12

Area	Average Activity	% <4 pCi/L	% 4-20 pCi/L	% >20 pCi/L
Living Area - 1st Floor	0.117 pCi/L	100%	0%	0%
Living Area - 2nd Floor	0.450 pCi/L	100%	0%	0%
Basement	1.700 pCi/L	100%	0%	0%

PHYSICAL SETTING SOURCE RECORDS SEARCHED

TOPOGRAPHIC INFORMATION

USGS 7.5' Digital Elevation Model (DEM)
Source: United States Geologic Survey
EDR acquired the USGS 7.5' Digital Elevation Model in 2002 and updated it in 2006. The 7.5 minute DEM corresponds to the USGS 1:24,000- and 1:25,000-scale topographic quadrangle maps. The DEM provides elevation data with consistent elevation units and projection.

Current USGS 7.5 Minute Topographic Map
Source: U.S. Geological Survey

HYDROLOGIC INFORMATION

Flood Zone Data: This data was obtained from the Federal Emergency Management Agency (FEMA). It depicts 100-year and 500-year flood zones as defined by FEMA. It includes the National Flood Hazard Layer (NFHL) which incorporates Flood Insurance Rate Map (FIRM) data and Q3 data from FEMA in areas not covered by NFHL.
Source: FEMA
Telephone: 877-336-2627
Date of Government Version: 2003, 2015

NWI: National Wetlands Inventory. This data, available in select counties across the country, was obtained by EDR in 2002, 2005 and 2010 from the U.S. Fish and Wildlife Service.

State Wetlands Data: Wetland Inventory
Source: Department of Fish & Game
Telephone: 916-445-0411

HYDROGEOLOGIC INFORMATION

AQUIFLOW^{R} Information System
Source: EDR proprietary database of groundwater flow information
EDR has developed the AQUIFLOW Information System (AIS) to provide data on the general direction of groundwater flow at specific points. EDR has reviewed reports submitted to regulatory authorities at select sites and has extracted the date of the report, hydrogeologically determined groundwater flow direction and depth to water table information.

GEOLOGIC INFORMATION

Geologic Age and Rock Stratigraphic Unit
Source: P.G. Schruben, R.E. Arndt and W.J. Bawiec, Geology of the Conterminous U.S. at 1:2,500,000 Scale - A digital representation of the 1974 P.B. King and H.M. Beikman Map, USGS Digital Data Series DDS - 11 (1994).

STATSGO: State Soil Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
The U.S. Department of Agriculture's (USDA) Natural Resources Conservation Service (NRCS) leads the national Conservation Soil Survey (NCSS) and is responsible for collecting, storing, maintaining and distributing soil survey information for privately owned lands in the United States. A soil map in a soil survey is a representation of soil patterns in a landscape. Soil maps for STATSGO are compiled by generalizing more detailed (SSURGO) soil survey maps.

SSURGO: Soil Survey Geographic Database
Source: Department of Agriculture, Natural Resources Conservation Service (NRCS)
Telephone: 800-672-5559
SSURGO is the most detailed level of mapping done by the Natural Resources Conservation Service, mapping scales generally range from 1:12,000 to 1:63,360. Field mapping methods using national standards are used to construct the soil maps in the Soil Survey Geographic (SSURGO) database. SSURGO digitizing duplicates the original soil survey maps. This level of mapping is designed for use by landowners, townships and county natural resource planning and management.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

LOCAL / REGIONAL WATER AGENCY RECORDS

FEDERAL WATER WELLS

PWS: Public Water Systems
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Public Water System data from the Federal Reporting Data System. A PWS is any water system which provides water to at least 25 people for at least 60 days annually. PWSs provide water from wells, rivers and other sources.

PWS ENF: Public Water Systems Violation and Enforcement Data
Source: EPA/Office of Drinking Water
Telephone: 202-564-3750
Violation and Enforcement data for Public Water Systems from the Safe Drinking Water Information System (SDWIS) after August 1995. Prior to August 1995, the data came from the Federal Reporting Data System (FRDS).

USGS Water Wells: USGS National Water Inventory System (NWIS)
This database contains descriptive information on sites where the USGS collects or has collected data on surface water and/or groundwater. The groundwater data includes information on wells, springs, and other sources of groundwater.

STATE RECORDS

Water Well Database
Source: Department of Water Resources
Telephone: 916-651-9648

California Drinking Water Quality Database
Source: Department of Public Health
Telephone: 916-324-2319
The database includes all drinking water compliance and special studies monitoring for the state of California since 1984. It consists of over 3,200,000 individual analyses along with well and water system information.

OTHER STATE DATABASE INFORMATION

California Oil and Gas Well Locations
Source: Department of Conservation
Telephone: 916-323-1779
Oil and Gas well locations in the state.

RADON

State Database: CA Radon
Source: Department of Health Services
Telephone: 916-324-2208
Radon Database for California

Area Radon Information
Source: USGS
Telephone: 703-356-4020
The National Radon Database has been developed by the U.S. Environmental Protection Agency (USEPA) and is a compilation of the EPA/State Residential Radon Survey and the National Residential Radon Survey. The study covers the years 1986 - 1992. Where necessary data has been supplemented by information collected at private sources such as universities and research institutions.

EPA Radon Zones
Source: EPA
Telephone: 703-356-4020
Sections 307 & 309 of IRAA directed EPA to list and identify areas of U.S. with the potential for elevated indoor radon levels.

PHYSICAL SETTING SOURCE RECORDS SEARCHED

OTHER

Airport Landing Facilities: Private and public use landing facilities
Source: Federal Aviation Administration, 800-457-6656

Epicenters: World earthquake epicenters, Richter 5 or greater
Source: Department of Commerce, National Oceanic and Atmospheric Administration

California Earthquake Fault Lines: The fault lines displayed on EDR's Topographic map are digitized quaternary fault lines, prepared in 1975 by the United State Geological Survey. Additional information (also from 1975) regarding activity at specific fault lines comes from California's Preliminary Fault Activity Map prepared by the California Division of Mines and Geology.

STREET AND ADDRESS INFORMATION

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APPENDIX

D

Motte Rancon Distribution Center
26340 Trumble Road
ROMOLAND, CA 92585

Inquiry Number: 5269785.3
April 24, 2018

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

04/24/18

Site Name:

Motte Rancon Distribution Cent
26340 Trumble Road
ROMOLAND, CA 92585
EDR Inquiry # 5269785.3

Client Name:

Rainwater Consulting
24051 Golden Pheasant Lane
Murrieta, CA 92562
Contact: Tim Doyle

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Rainwater Consulting were identified for the years listed below. The Sanborn Library is the largest, most complete collection of fire insurance maps. The collection includes maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow, and others. Only Environmental Data Resources Inc. (EDR) is authorized to grant rights for commercial reproduction of maps by the Sanborn Library LLC, the copyright holder for the collection. Results can be authenticated by visiting www.edrnet.com/sanborn.

The Sanborn Library is continually enhanced with newly identified map archives. This report accesses all maps in the collection as of the day this report was generated.

Certified Sanborn Results:

Certification # C699-47B9-8DEF

PO # 0424018

Project 182161-60A

UNMAPPED PROPERTY

This report certifies that the complete holdings of the Sanborn Library, LLC collection have been searched based on client supplied target property information, and fire insurance maps covering the target property were not found.

Sanborn® Library search results

Certification #: C699-47B9-8DEF

The Sanborn Library includes more than 1.2 million fire insurance maps from Sanborn, Bromley, Perris & Browne, Hopkins, Barlow and others which track historical property usage in approximately 12,000 American cities and towns. Collections searched:

- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

The Sanborn Library LLC Since 1866™

Limited Permission To Make Copies

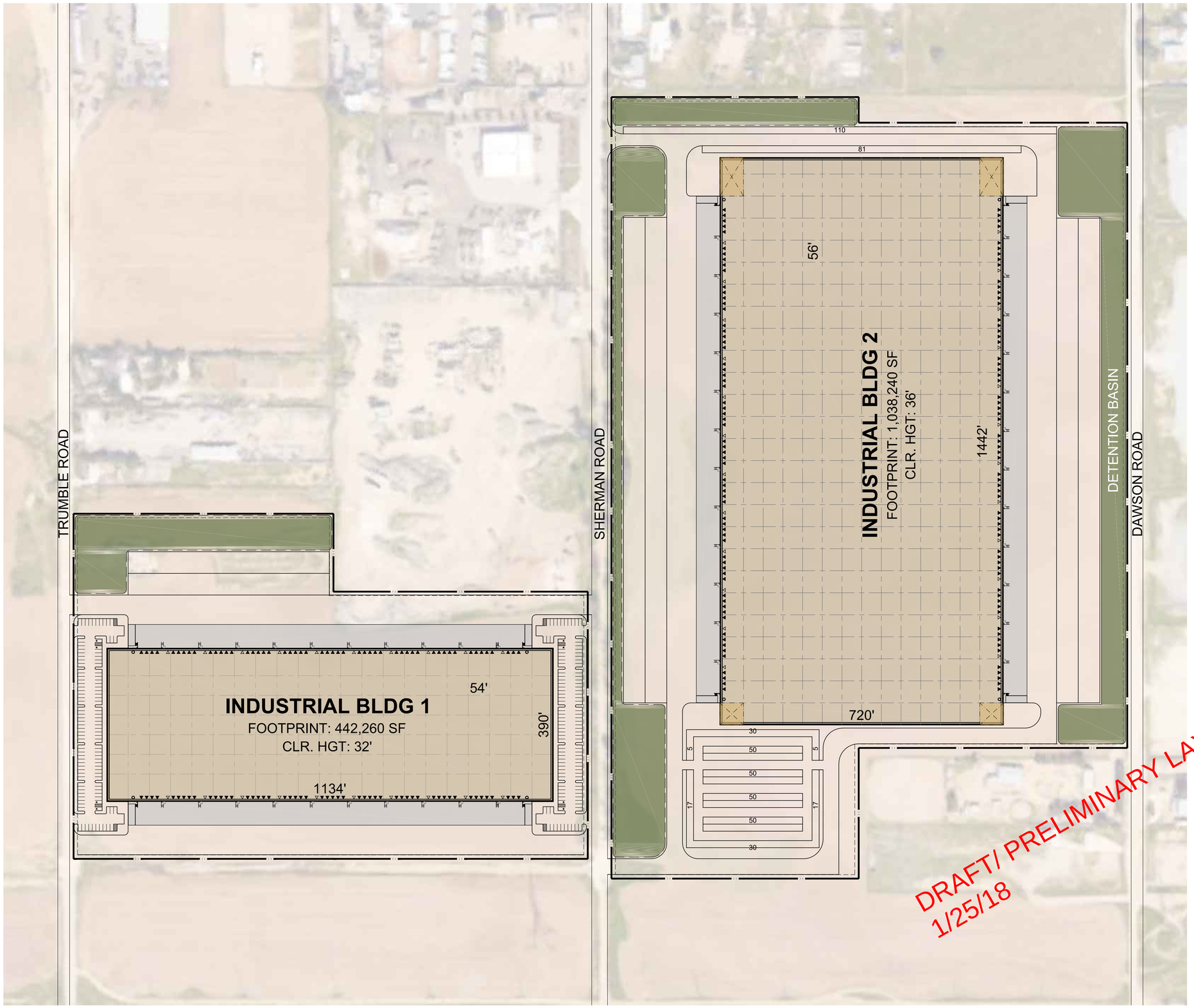
Rainwater Consulting (the client) is permitted to make up to FIVE photocopies of this Sanborn Map transmittal and each fire insurance map accompanying this report solely for the limited use of its customer. No one other than the client is authorized to make copies. Upon request made directly to an EDR Account Executive, the client may be permitted to make a limited number of additional photocopies. This permission is conditioned upon compliance by the client, its customer and their agents with EDR's copyright policy; a copy of which is available upon request.

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DEVELOPMENT STANDARDS:

ZONING:	SP-M-M	
MAX. F.A.R.:		
MAX. COVERAGE:		
MAX. BLDG. HT.:	50 FT	3
BUILDING SETBACKS:		
FRONT:	25 FT	
SIDE:	0 FT	4
REAR:	0 FT	4
LANDSCAPE SETBACKS:		
FRONT:	10 FT	
SIDE:	0 FT	
REAR:	0 FT	
LANDSCAPE REQ	10%	1
OFF-STREET PARKING:		
STANDARD:	9X18	2
COMPACT:	8.5X16	
COMPACT %:	20%	
DRIVE AISLE:	24 FT	
FIRE LANE:		
OVERHANG:	2 FT	
TREE WELL:		
REQ. PARKING RATIO BY USE:		
WAREHOUSE	1/2000 SF	
OFFICE:	1/200 SF	

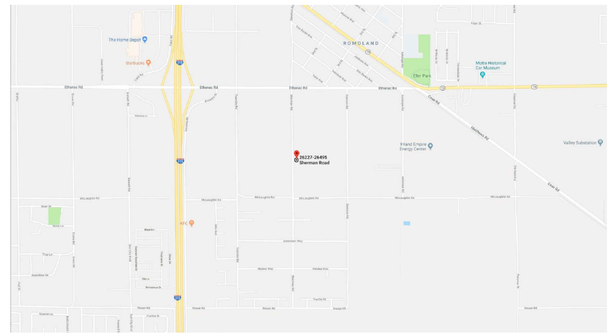
NOTES:

1 additional 10% parking must be landscaped

2 end stalls 11x18

3 Height up to 75 feet can be granted pursuant to section 18.34

4 Where the front, side, or rear yard adjoins a street, the minimum setback shall be 25 feet from the right-of-way line. Where the front, side or rear yard adjoins a lot zoned R-R, R-1, R-A, R-2, R-3, R-4, R-6, R-T, R-T-R, W-2-M, or SP with a residential use, the minimum setback shall be 25 feet from the property line. Where the front, side, or rear yard adjoins a lot with a zoning classification other than those specified in paragraph (1) above, there is no minimum setback.



This conceptual design is based upon a preliminary review of entitlement requirements and on unverified and possibly incomplete site and/or building information, and is intended merely to assist in exploring how the project might be developed.

1" = 100

0 50 100 200 500

NORTH

scheme: 1a

Conceptual Site Plan

Sherman Road
Romoland, CA 92585

WARE MALCOMB

SDG18-0010-00
01.25.2018

SHEET
1

Monday, April 23, 2018

Search Again

Property Information Center

Property Information for the 2014-2015 tax year as of January 1, 2014

Property Information

Parcel Number:	331110027-4
Property Address:	26340 TRUMBLE RD ROMOLAND CA 92585
Legal Description:	Lot 37 MB 011/038 TRUMBLE FARMS
Property Type:	N/A
Assessment Description:	2004 PALM HARBOR
Year Built	2004
Square Feet:	1944
Bedroom:	3
Bath:	2.0
Pool:	N
Lot Size:	1.00 Acres

Sales Information

Last Recorded Document:	06/2014
Recording Number:	0234737

Related Property Information

City Sphere:	MENIFEE
Supervisorial District:	MARION ASHLEY
Landuse Designation:	CITY
Agriculture Preserve:	NOT IN AN AGRICULTURE PRESERVE
School District:	ROMOLAND & PERRIS UNION HIGH
Water District:	EMWD
Fema Flood Plan:	FLOOD ZONE A

Assessed Value Information

Land	53,049
Structure	87,001
Full Value	140,050
Total Net	140,050

Assessment Information

Assessment Number:	331110027-4
Tax Rate Area:	026-232
Taxability Code:	0-00
Base Year:	2013

Parcel Map

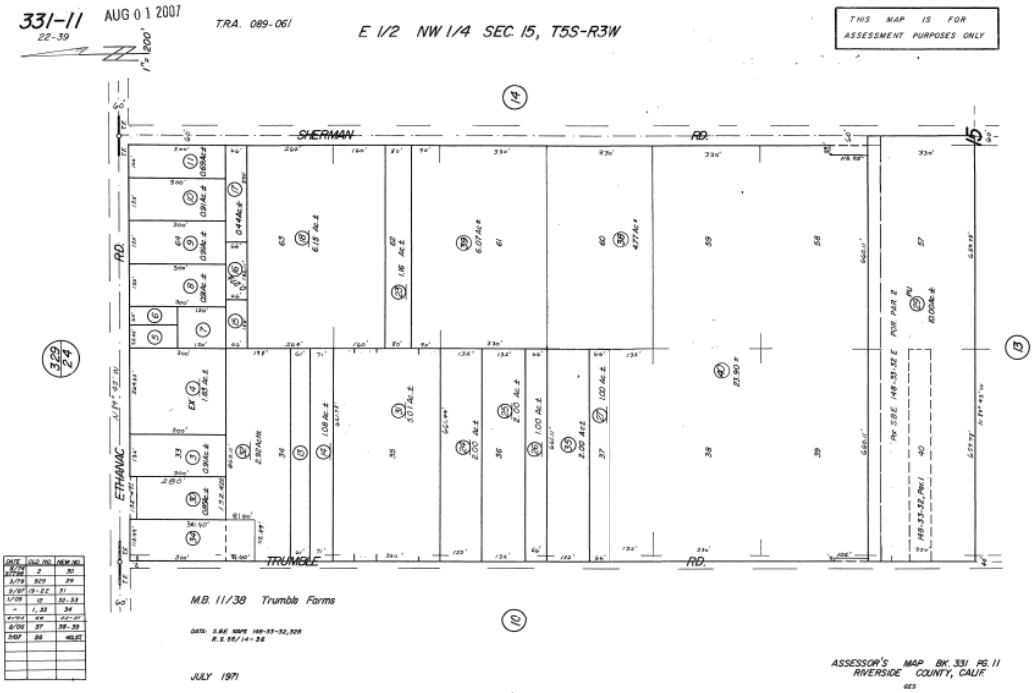
View Parcel Map

Tax Assessment District	N/A

Parcel Number: 331110027-4
Map Book: 331
Page/Block: 110
Parcel: 27
Check Digit: 4

HOW TO READ THE ASSESSOR'S MAP PAGE

The numerical parcel number on a map page consists of three main segments. The first three digits is the map book number. The second set of three numbers is the page/block number, and the third segment identifies the parcel number.



APPENDIX

E

ENVIRONMENTAL SITE ASSESSMENT
TRANSACTION SCREEN QUESTIONNAIRE

This document is an excerpt of Practice E1528-06: Standard Practice for Environmental Site Assessments: Transaction Screen Process, which is under the jurisdiction of ASTM Committee E50 on Environmental Assessment as is the direct responsibility of Subcommittee E50.02 on Commercial Real Estate Transactions. This questionnaire represents only Sections 5 and 6 of Practice E 1528-06 and should not be construed as being the complete standard. It is necessary to refer to the full standard prior to using this questionnaire. COPYRIGHT@ 2006 ASTM INTERNATIONAL, West Conshohocken, PA. Prior edition copyrighted 2000. Stock # ADJE152806. For the complete standard, or to order additional copies of this questionnaire, contact ASTM Customer service at (610) 832-9585.

5. Introduction to Transaction Screen Questionnaire

5.1 *Process*--The *transaction screen process* consists of asking questions contained within the *transaction screen questionnaire* of *owners* and *occupants* of the *property*, observing site conditions at the property with direction provided by the *transaction screen questionnaire*, and, to the extent *reasonably ascertainable*, conducting limited research regarding certain government records and certain standard historical sources. The questions asked of *owners* are the same questions as those asked of *occupants*.

5.2 *Guide*--The *transaction screen questionnaire* is followed by a guide designed to assist the person completing the *transaction screen questionnaire*. The guide to the *transaction screen questionnaire* is set out in Sections 7-10 of this practice. The guide is divided into three sections: Guide for Owner/Occupant Inquiry, Guide to Site Visit, and Guide to Government Records/Historical Sources Inquiry.

5.2.1 To assist the *user*, its employee or agent, or the preparer in preparing a report, the guide repeats each of the questions set out in the *transaction screen questionnaire* in both the guide for *owner/occupant* inquiry and the guide to *site visit*. The questions regarding government records/historical sources inquiry are also repeated in the guide to that section.

5.2.2 The guide also describes the procedures to be followed to determine if reliance upon the information in a prior *transaction screen* is appropriate under this practice.

5.2.3 A *user*, his employee or agent, or *preparer* conducting the *transaction screen process* should not use the *transaction screen questionnaire* without reference to or without familiarity with the guide based on prior use of the guide.

5.3 The *user* may either conduct the *transaction screen process*, or delegate it to an employee or agent or may contract with a third party to prepare the questionnaire on behalf of the *user*. No matter who prepares the questionnaire, the *user* remains responsible for the decision to conduct limited environmental *due diligence* and the impact of that decision on risk management.

5.4 The *preparer* conducting the *transaction screen* process should use good faith efforts in determining answers to the questions set forth in the *transaction screen questionnaire*. The *user* should take time and care to check whatever records are in the *user's* possession and forward relevant information or specialized knowledge to the *preparer*.

5.5 *Knowledge*--All answers should be given to the best of the *owner's* or *occupant's* knowledge. The most knowledgeable person available should be chosen to answer the questions.

5.5.1 While the person conducting the *transaction screen* has an obligation to ask the questions in the *transaction screen questionnaire*, others may have no obligation to answer them.

5.5.2 The *transaction screen questionnaire* and the *transaction screen guide* sometimes include the phrase "to the best of your knowledge." This phrase does not impose a constructive knowledge standard. It is intended as an assurance to the person being questioned that he or she is not obligated to search out information he or she does not currently have in order to answer the particular question.

5.6 *Conclusions Regarding Afirmative* or *Unknown Answers*-Once a *transaction screen questionnaire* has been completed, it shall be presented to the user. Subject to 5.6 through 5.7, an affirmative, unknown, or no response is presumed to be a *potential environmental concern*. If any of the questions set forth in the *transaction screen questionnaire* are answered in the affirmative, the *preparer* must document the reason for the affirmative answer. If any of the questions are not answered or the answer is unknown, the *user* should document such nonresponse or answer of unknown and evaluate it in light of the other information obtained in the *transaction screen process*, including, in particular, the site visit and the government recordslhistorical sources inquiry. If the *user* decides no further inquiry is warranted after receiving no response, an answer of unknown, or an affirmative answer, the *user* must document the reasons for any such conclusion.

5.6.1 Upon obtaining an affirmative answer, an answer of unknown or no response, the *user* should first refer to the guide. The guide may provide sufficient explanation to allow a *user* to conclude that no further inquiry is appropriate with respect to the particular question.

5.6.2 If the guide to a particular question does not, in itself, permit a user to conclude that no further inquiry is appropriate, then the user should consider other information obtained from the *transaction screen process* relating to this question. For example, while on the site performing a *site visit*, a person may find a storage tank on the *property* and therefore answer Question 10 of the *transaction screen questionnaire* in the affirmative. However, during or subsequent to the *owner/occupant* inquiry, the *owner* may establish that substances now or historically contained in the tank (for example, water) are not likely to cause contamination.

5.6.3 If either the guide to the question or other information obtained during the *transaction screen process* does not permit a *user* to conclude no further inquiry is appropriate with respect to such question, then the user must determine, in the exercise of the *user's* reasonable business judgment, based upon the totality of unresolved affirmative answers or answers of unknown received during the *transaction screen process*, whether further inquiry may be limited to those specific issues identified as of concern.

5.7 *Presumption*--A presumption exists that further inquiry is necessary if an affirmative answer is given to a question or because the answer was unknown or no response was given. In rebutting this presumption, the *user* should evaluate information obtained from each component of the *transaction screen* process and consider whether sufficient information has been obtained to conclude that no further inquiry is necessary. The *user* must determine, in the exercise of the *user's* reasonable business judgment, the scope of such further inquiry.

5.8 *Further Inquiry*--Upon completing the *transaction screen questionnaire*, if the *user* concludes that further inquiry or action is needed (for example, consult with an environmental consultant, contractor, governmental authority, or perform additional governmental and/or historical records review), the *user* should proceed with such inquiry. (Note that if the *user* determines to proceed with a Phase I Environment Site Assessment, the *user* may apply the current Practice E 1527 or alternatively the provisions of EPA's regulation "Standards and Practices for All Appropriate Inquiries," 40 C.F.R. Part 312.)

5.9 *Signature*--The user and the *preparer* of the *transaction screen questionnaire* must complete and sign the questionnaire as provided at the end of the questionnaire.

6. Transaction Screen Questionnaire

6.1 *Persons to Be Questioned*-The following questions should be asked of *(1)* the current owner of the *property*, *(2)* any major occupant of the *property* or, if the property does not have any *major occupants*, at least 10 % of the occupants of the *property*, and *(3)* in addition to the current owner and the occupants identified in *(2)*, any *occupant* likely to be using, treating, generating, storing, or disposing of *hazardous substances* or *petroleum products* on or from the *property*. A major occupant is any *occupant* using at least 40 % of the leasable area of the *property* or any anchor tenant when the *property* is a shopping center. In a multifamily *property* containing both residential and commercial uses, the *preparer* does not need to ask questions of the residential *occupants*. The *preparer* should ask each person to answer all questions to the best of the respondent's *actual knowledge* and in good faith. When completing the *site visit* column, the *preparer* should be sure to observe the *property* and any buildings and other structures on the *property*. The guide to this *transaction screen questionnaire* (see Sections 7-10) provides further details on the appropriate use of this questionnaire. (See Note 2.)
NOTE 2-Unk = "unknown" or "no response."

Description of Site Address:

26340 Trumble Road, Menifee, Ca

APN's 331-110-027, 331-110-035, 331-110-041, 331-140-010 and 331-140-025

Question	Owner	Occupants (if applicable)	Observed During Site Visit	If yes, provide description
1a. Is the property used for an industrial use?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
1b. Is any adjoining property used for an industrial use?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
2a. Did you observe evidence or do you have any prior knowledge that the property has been used for an industrial use in the past?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
2b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used for an industrial use in the past?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
3a. Is the property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
3b. Is any adjoining property used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
4a. Did you observe evidence or do you have any prior knowledge that the property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
4b. Did you observe evidence or do you have any prior knowledge that any adjoining property has been used as a gasoline station, motor repair facility, commercial printing facility, dry cleaners, photo developing laboratory, junkyard or landfill, or as a waste treatment, storage, disposal, processing, or recycling facility (if applicable, identify which)?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
5a. Are there currently any damaged or discarded automotive or industrial batteries, pesticides, paints, or other chemicals in individual containers of >5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
5b. Did you observe evidence or do you have any prior knowledge that there have been previously any damaged or discarded automotive or industrial batteries, or pesticides, paints, or other chemicals in individual containers of >5 gal (19 L) in volume or 50 gal (190 L) in the aggregate, stored on or used at the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
6a. Are there currently any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
6b. Did you observe evidence or do you have any prior knowledge that there have been previously any industrial drums (typically 55 gal (208 L)) or sacks of chemicals located on the property or at the facility?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
7a. Did you observe evidence or do you have any prior knowledge that fill dirt has been brought onto the property that originated from a contaminated site?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	

' Unk = "unknown" or "no response"

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Question	Owner	Occupants (if applicable)	Observed During Site Visit	If yes, provide description
7b. Did you observe evidence or do you have any prior knowledge that fill dirt has been brought onto the property that is of an unknown origin?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
8a. Are there currently any pits, ponds, or lagoons located on the property in connection with waste treatment or waste disposal?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
8b. Did you observe evidence or do you have any prior knowledge that there have been previously, any pits, ponds, or lagoons located on the property in connection with waste treatment or waste disposal?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
9a. Is there currently any stained soil on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
9b. Did you observe evidence or do you have any prior knowledge that there has been previously, any stained soil on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
10a. Are there currently any registered or unregistered storage tanks (above or underground) located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
10b. Did you observe evidence or do you have any prior knowledge that there have been previously, any registered or unregistered storage tanks (above or underground) located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
11a. Are there currently any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
11b. Did you observe evidence or do you have any prior knowledge that there have been previously, any vent pipes, fill pipes, or access ways indicating a fill pipe protruding from the ground on the property or adjacent to any structure located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ○	
12a. Is there currently evidence of leaks, spills or staining by substances other than water, or foul odors, associated with any flooring, drains, walls, ceilings, or exposed grounds on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
12b. Did you observe evidence or do you have any prior knowledge that there have been previously any leaks, spills, or staining by substances other than water, or foul odors, associated with any flooring drains, walls, ceilings or exposed grounds on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
13a. If the property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that contaminants have been identified in the well or system that exceed guidelines applicable to the water system?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
13b. If the property is served by a private well or non-public water system, is there evidence or do you have prior knowledge that the well has been designated as contaminated by any government environment health agency?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
14. Does the owner or occupant of the property have any knowledge of environmental liens or governmental notification relating to past or recurrent violations of environmental laws with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15a. Has the owner or occupant of the property been informed of the past existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15b. Has the owner or occupant of the property been informed of the current existence of hazardous substances or petroleum products with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15c. Has the owner or occupant of the property been informed of the past existence of environmental violations with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
15d. Has the owner or occupant of the property been informed of the current existence of environmental violations with respect to the property or any facility located on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		

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Question	Owner	Occupants (if applicable)	Observed During Site Visit	If yes, provide description
16. Does the owner or occupant of the property have any knowledge of any environmental site assessment of the property or facility that indicated the presence of hazardous substances or petroleum products on, or contamination of, the property or recommended further assessment of the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
17. Does the owner or occupant of the property know of any past, threatened, or pending lawsuits or administrative proceedings concerning a release or threatened release of any hazardous substance or petroleum products involving the property by any owner or occupant of the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○		
18a. Does the property discharge waste-water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a storm water system?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
18b. Does the property discharge waste water (not including sanitary waste or storm water) onto or adjacent to the property and/or into a sanitary sewer system?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
19. Did you observe evidence or do you have any prior knowledge that any hazardous substances or petroleum products, unidentified waste materials, tires, automotive or industrial batteries, or any other waste materials have been dumped above grade, buried and/or burned on the property?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	
20. Is there a transformer, capacitor, or any hydraulic equipment for which there are any records indicating the presence of PCBs?	Yes ○ No ● Unk ○	Yes ○ No ● Unk ○	Yes ○ No ●	

Government Records/Historical Sources Inquiry

(See guide, Section 10)

21. Do any of the following federal, state, or tribal government record systems list the property or any property within the search distance noted below (where available):	Approximate Minimum Search Distance, miles (kilometres)	
Federal NPL site	1.0	Yes ○ No ●
Federal Delisted NPL site	0.5	Yes ○ No ●
Federal CERCLIS	0.5	Yes ○ No ●
Federal CERCLIS NFRAP site	0.5	Yes ○ No ●
Federal RCRA CORRACTS facilities	1.0	Yes ○ No ●
Federal RCRA non-CORRACTS TSD	0.5	Yes ○ No ●
Federal RCRA generators	property and adjoining properties	Yes ○ No ●
Federal institutional control/engineering control registries	property only	
Federal ERNS	property only	Yes ○ No ●

State and tribal lists of hazardous waste sites identified for investigation or remediation:

State-and tribal-equivalent NPL	1.0	Yes ○ No ●
State-and tribal-equivalent	0.5	Yes ○ No ●
State-and tribal-landfill andlor solid waste disposal site lists	0.5	Yes ○ No ●
State-and tribal-leaking storage tank lists	0.5	Yes ○ No ●
State and tribal registered storage tank lists	property and adjoiningproperties	Yes ○ No ●
State and tribal institutional controllengineering control registries	property only	Yes ○ No ●
State and tribal voluntary cleanup sites	0.5	Yes ○ No ●
State and tribal Brownfield sites	0.5	Yes ○ No ●

22. Based upon a review of fire insurance maps (10.2.3) or local street directories (10.2.3), all as specified in the guide, are any buildings or other improvements on the property or on an adjoiningproperty identified as having been used for an industrial use or uses likely to lead to contamination of the property? Yes ○ No ● Unavailable ○

Result Clear

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The Owner questionnaire answers were provided was completed by:

Name: Carissa Hainsworth
Title: Project Manager
Firm: Mike Naggar & Associates
Address: 445 South D Street
Perris, CA 92570
Phone Number: 951-437-4329
Date: 05/03/2018
Role (s) at the site: Project Consultant
Number of years at the site: >1 year
Relationship to use (e.g. principal, employee, agent, consultant): Project Consultant/Manager

The Occupant questionnaire answers were provided by:

Name: Alejandro Soberanes
Title: Resident
Firm: N/A
Address: 26340 Trumble Road
Menifee, Ca
Phone Number: Unk.
Date: 4/28/18
Role (s) at the site: Occupant
Number of years at the site: Unk.
Realationship to use (e.g. principal, employee, agent, consultant):

The Site Visit questionnaire was completed by:

Name:
Title:
Firm:
Address:
Phone Number:
Date:
Role (s) at the site:
Number of years at the site:
Realationship to use (e.g. principal, employee, agent, consultant):

It is the user's responsibility to draw conclusions regarding afirmative or unknown answers.

The Government Records and Historical Sources Inquiry questionnaire was completed by:

Name: Tim Doyle
Title: Geologist
Firm: E-S
Address: 42284 Remington Avenue
Temecula, Ca 92590
Phone Number: 951-219-4752
Date: 4/28/18
Role (s) at the site: Assessor
Number of years at the site: N/A
Relationship to use (e.g. principal, employee, agent, consultant): N/A

User's relationship to the site (for example, owner, prospective purchaser, lender, etc.)

If the preparer (s) is different from the user, complete the following:

Name of User:
User's Address:
User's Phone Number:

Copies of the completed questionnaires have been filed at:

Copies of the completed questionnaires have been mailed or delivered to:

Preparer represents that to the best of the preparer's knowledge the above statements and facts are true and correct and to the best of the preparer's actual knowledge no material facts have been suppressed or misstated.

Signature: Carissa Hainsworth
Date: 05/03/2018

Signature: Tim Doyle
Date: 4/28/18

Signature: Alejandro Soberanes
Date: 4/28/18

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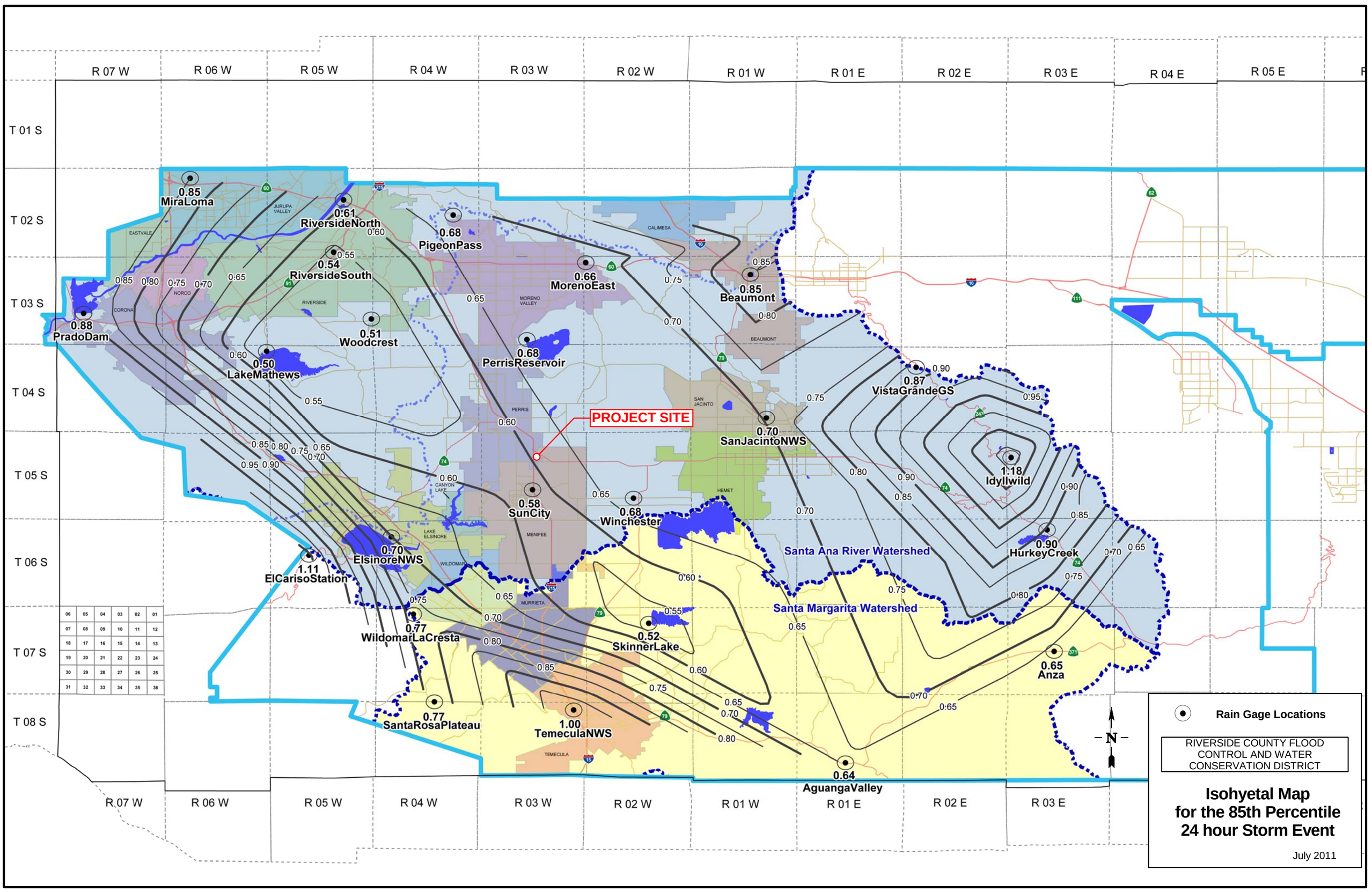
Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

Not Applicable

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation


R 07 W
R 06 W
R 05 W
R 04 W
R 03 W
R 02 W
R 01 W
R 01 E
R 02 E
R 03 E
R 04 E
R 05 E
T 01 S
T 02 S
T 03 S
T 04 S
T 05 S
T 06 S
T 07 S
T 08 S
0.85 MiraLoma
0.61 RiversideNorth
0.54 RiversideSouth
0.68 PigeonPass
0.66 MorenoEast
0.85 Beaumont
0.88 PradoDam
0.51 Woodcrest
0.50 LakeMathews
0.68 PerrisReservoir
0.87 VistaGrandeGS
1.18 Idyllwild
0.70 SanJacintoNWS
PROJECT SITE
0.58 SunCity
0.68 Winchester
0.70 ElsinoreNWS
1.11 ElCarisoStation
0.77 WildomarLaCresta
0.52 SkinnerLake
0.90 HurkeyCreek
0.65 Anza
0.77 SantaRosaPlateau
1.00 TemeculaNWS
0.64 AguangaValley
Santa Ana River Watershed
Santa Margarita Watershed
JURUPA VALLEY
EASTVALE
NORCO
CORONA
RIVERSIDE
MORENO VALLEY
CALIMESA
BEAUMONT
SAN JACINTO
PERRIS
CANYON LAKE
LAKE ELSINORE
WILDOMAR
MENIFEE
MURRIETA
TEMECULA
HEMET
Rain Gage Locations
RIVERSIDE COUNTY FLOOD CONTROL AND WATER CONSERVATION DISTRICT
Isohyetal Map for the 85th Percentile 24 hour Storm Event
July 2011

Santa Ana Watershed - BMP Design Volume, V_{BMP}

(Rev. 10-2011)

Legend: Required Entries / Calculated Cells

*(Note this worksheet shall **only** be used in conjunction with BMP designs from the **LID BMP Design Handbook**)*

Company Name: Albert A. Webb Associates — Date: 9/20/2024

Designed by: MJS — Case No:

Company Project Number/Name:

BMP Identification

BMP NAME / ID: BMP-A

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

85th Percentile, 24-hour Rainfall Depth, from the Isohyetal Map in Handbook Appendix E

D_{85}= 0.61 inches

Drainage Management Area Tabulation

Insert additional rows if needed to accommodate all DMAs draining to the BMP

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Storm Depth (in)*	*Design Capture Volume, V_{BMP} (cubic feet)*	*Proposed Volume on Plans (cubic feet)*
L-A	*95690*	*Ornamental Landscaping*	*0.1*	*0.11*	*10569.7*			
R-A	*829753*	*Roofs*	*1*	*0.89*	*740139.7*			
H-A	*869310*	*Concrete or Asphalt*	*1*	*0.89*	*775424.5*			
BMP-A	*1701*	*Ornamental Landscaping*	*0.1*	*0.11*	*187.9*			

Project: **Heritage Valley Business Center**

Chamber Model -	MC-4500	
Units -	Imperial	
Number of Chambers -	993	
Number of End Caps -	18	
Voids in the stone (porosity) -	40	%
Base of Stone Elevation -	1417.89	ft
Amount of Stone Above Chambers -	12	in
Amount of Stone Below Chambers -	9	in

Area of system - 37784 sf Min. Area - 36915 sf min. area

StormTech MC-4500 Cumulative Storage Volumes

Height of System (inches)	Incremental Single Chamber (cubic feet)	Incremental Single End Cap (cubic feet)	Incremental Chambers (cubic feet)	Incremental End Cap (cubic feet)	Incremental Stone (cubic feet)	Incremental Ch, EC and Stone (cubic feet)	Cumulative System (cubic feet)	Elevation (feet)
81	0.00	0.00	0.00	0.00	1259.47	1259.47	165901.09	1424.64
80	0.00	0.00	0.00	0.00	1259.47	1259.47	164641.61	1424.56
79	0.00	0.00	0.00	0.00	1259.47	1259.47	163382.14	1424.47
78	0.00	0.00	0.00	0.00	1259.47	1259.47	162122.66	1424.39
77	0.00	0.00	0.00	0.00	1259.47	1259.47	160863.19	1424.31
76	0.00	0.00	0.00	0.00	1259.47	1259.47	159603.72	1424.22
75	0.00	0.00	0.00	0.00	1259.47	1259.47	158344.24	1424.14
74	0.00	0.00	0.00	0.00	1259.47	1259.47	157084.77	1424.06
73	0.00	0.00	0.00	0.00	1259.47	1259.47	155825.30	1423.97
72	0.00	0.00	0.00	0.00	1259.47	1259.47	154565.82	1423.89
71	0.00	0.00	0.00	0.00	1259.47	1259.47	153306.35	1423.81
70	0.00	0.00	0.00	0.00	1259.47	1259.47	152046.88	1423.72
69	0.04	0.01	40.68	0.23	1243.11	1284.02	150787.40	1423.64
68	0.12	0.03	115.28	0.61	1213.12	1329.01	149503.38	1423.56
67	0.16	0.05	163.58	0.93	1193.67	1358.18	148174.37	1423.47
66	0.21	0.07	207.26	1.19	1176.09	1384.54	146816.19	1423.39
65	0.27	0.08	266.47	1.50	1152.29	1420.25	145431.65	1423.31
64	0.45	0.11	449.62	1.90	1078.87	1530.38	144011.39	1423.22
63	0.67	0.13	660.60	2.38	994.28	1657.27	142481.01	1423.14
62	0.80	0.16	793.42	2.90	940.95	1737.27	140823.74	1423.06
61	0.91	0.19	901.77	3.40	897.41	1802.57	139086.48	1422.97
60	1.00	0.22	995.88	3.93	859.55	1859.36	137283.91	1422.89
59	1.09	0.25	1079.72	4.44	825.81	1909.97	135424.54	1422.81
58	1.16	0.28	1155.34	4.96	795.36	1955.65	133514.57	1422.72
57	1.23	0.30	1225.37	5.43	767.15	1997.96	131558.92	1422.64
56	1.30	0.33	1290.58	5.90	740.88	2037.36	129560.96	1422.56
55	1.36	0.35	1351.50	6.38	716.32	2074.20	127523.60	1422.47
54	1.42	0.38	1408.78	6.91	693.20	2108.89	125449.40	1422.39
53	1.47	0.41	1463.01	7.37	671.32	2141.70	123340.51	1422.31
52	1.53	0.44	1514.48	7.94	650.51	2172.92	121198.81	1422.22
51	1.57	0.47	1563.47	8.44	630.71	2202.62	119025.89	1422.14
50	1.62	0.50	1610.04	8.91	611.89	2230.85	116823.27	1422.06
49	1.67	0.52	1654.56	9.37	593.90	2257.84	114592.43	1421.97
48	1.71	0.54	1697.15	9.80	576.70	2283.64	112334.59	1421.89
47	1.75	0.57	1737.84	10.20	560.26	2308.30	110050.95	1421.81
46	1.79	0.59	1776.77	10.59	544.53	2331.89	107742.65	1421.72
45	1.83	0.61	1814.40	10.98	529.32	2354.70	105410.76	1421.64
44	1.86	0.63	1850.40	11.38	514.76	2376.54	103056.05	1421.56
43	1.90	0.64	1885.04	11.58	500.83	2397.44	100679.52	1421.47
42	1.93	0.68	1918.31	12.19	487.27	2417.78	98282.08	1421.39
41	1.96	0.70	1950.33	12.60	474.30	2437.23	95864.30	1421.31
40	2.00	0.72	1981.15	13.00	461.81	2455.97	93427.07	1421.22
39	2.03	0.74	2010.83	13.39	449.79	2474.01	90971.10	1421.14
38	2.05	0.76	2039.41	13.76	438.21	2491.38	88497.10	1421.06
37	2.08	0.79	2066.93	14.14	427.05	2508.11	86005.72	1420.97
36	2.11	0.80	2093.32	14.45	416.37	2524.14	83497.60	1420.89
35	2.13	0.82	2118.91	14.76	406.01	2539.68	80973.47	1420.81
34	2.16	0.84	2143.57	15.09	396.01	2554.67	78433.79	1420.72
33	2.18	0.85	2167.26	15.32	386.44	2569.03	75879.13	1420.64
32	2.21	0.86	2190.09	15.47	377.25	2582.81	73310.10	1420.56
31	2.23	0.89	2212.06	16.01	368.25	2596.31	70727.29	1420.47
30	2.25	0.90	2233.13	16.28	359.71	2609.12	68130.98	1420.39
29	2.27	0.92	2253.46	16.51	351.48	2621.46	65521.86	1420.31
28	2.29	0.92	2272.96	16.56	343.67	2633.19	62900.40	1420.22
27	2.31	0.94	2291.70	16.98	336.00	2644.68	60267.22	1420.14
26	2.33	0.96	2309.67	17.21	328.72	2655.60	57622.54	1420.06
25	2.34	0.97	2326.89	17.44	321.74	2666.07	54966.94	1419.97
24	2.36	0.98	2343.39	17.66	315.05	2676.11	52300.87	1419.89
23	2.38	0.97	2359.17	17.48	308.82	2685.46	49624.76	1419.81
22	2.39	1.00	2374.24	18.06	302.55	2694.85	46939.30	1419.72
21	2.41	1.01	2388.62	18.20	296.74	2703.57	44244.44	1419.64
20	2.42	1.02	2402.32	18.37	291.20	2711.89	41540.88	1419.56
19	2.43	1.03	2415.36	18.55	285.91	2719.81	38828.99	1419.47
18	2.44	1.04	2427.72	18.70	280.91	2727.33	36109.17	1419.39
17	2.46	1.05	2439.44	18.83	276.16	2734.44	33381.85	1419.31
16	2.47	1.05	2450.51	18.97	271.68	2741.16	30647.41	1419.22

Pump Rate Calculation

DMA-A (Water Quality + HCOC)

$$\frac{V_{BMP}}{t_{drain}} = Area * i = \ Q_{pump}$$

$$\frac{V_{BMP}}{t_{drain}} = Q_{pump}$$

$$Q_{pump} = \frac{ft^3}{hr} * \frac{1\ hr}{3600\ sec} * \frac{449\ gpm}{1\ \frac{ft^3}{sec}}$$

$$Q_{pump} = \frac{(77{,}600\ ft^3) + (164{,}483\ ft^3)}{72\ hr} * \frac{449}{3600}\ \frac{gpm}{\frac{ft^3}{hr}} = 419\ gpm$$

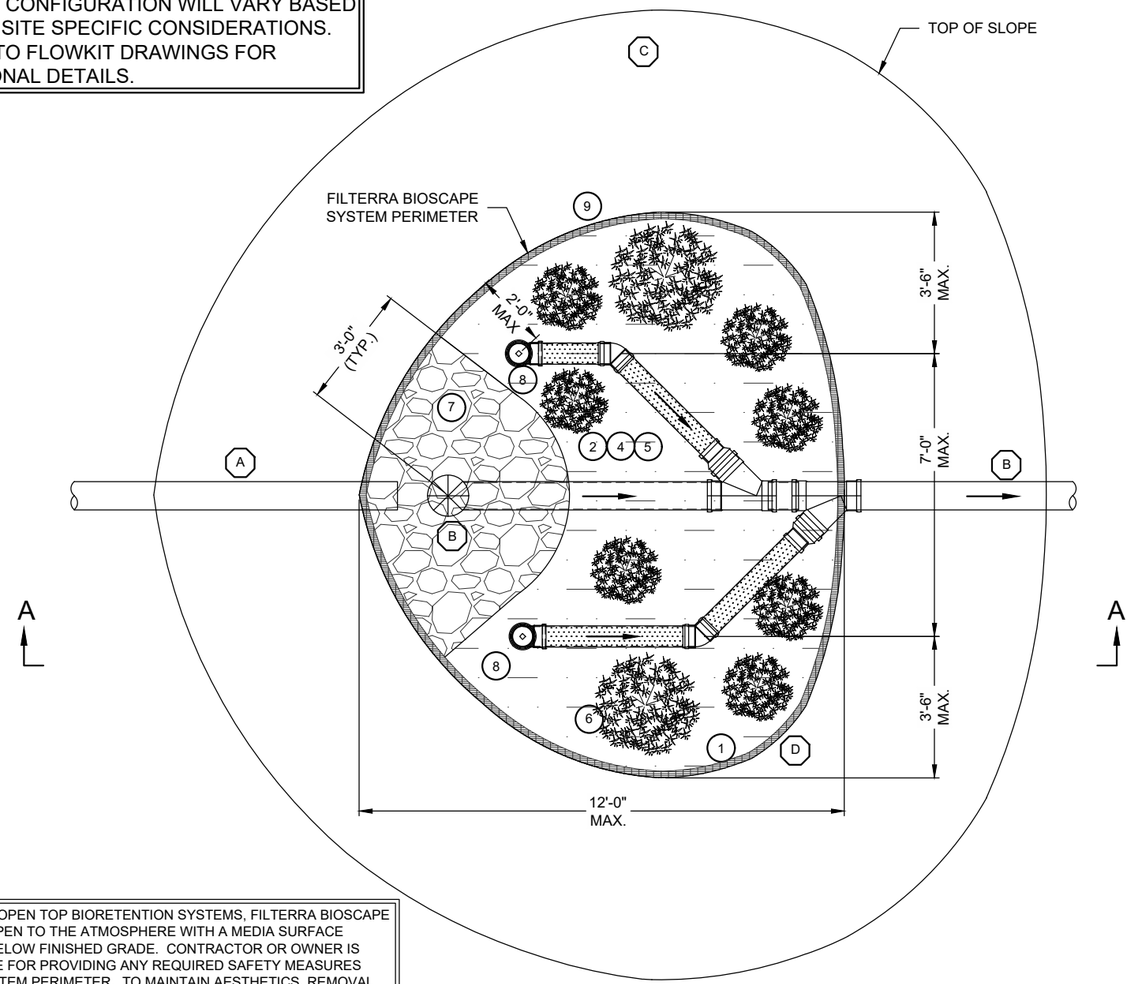
$$\boldsymbol{Q_{pump} = 419\ gpm = 0.9\ cfs}$$

The existing 2-year, 24-hour storm event flow rate is 1.3 cfs. For this project, a pump rate of 1.0 cfs was chosen to better align with the existing flow rate of 1.3 cfs.

$$\frac{V_{BMP}}{Q_{pump}} = t_{drain}$$

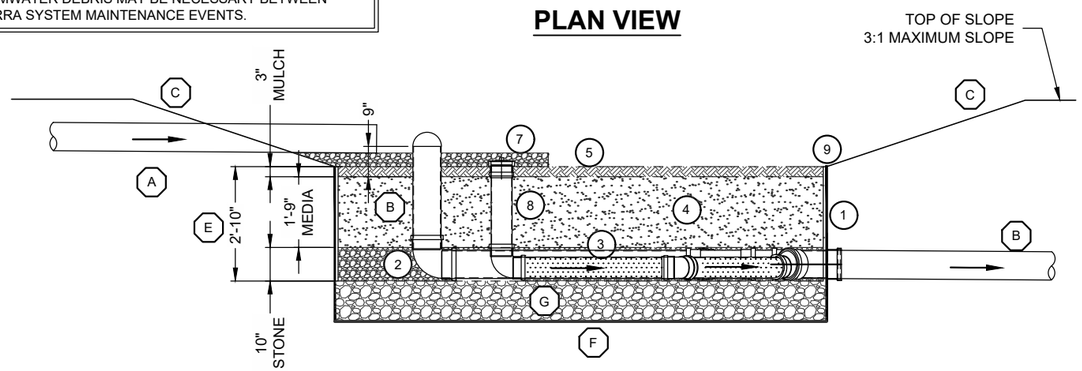
$$\boldsymbol{t_{drain} = \frac{(77{,}600\ ft^3) + (164{,}483 ft^3\ )}{1.0\ cfs} * \frac{1\ hr}{3600\ sec} = 67.2\ hrs}$$

THIS IS A SCHEMATIC LAYOUT ONLY. ACTUAL CONFIGURATION WILL VARY BASED ON THE SITE SPECIFIC CONSIDERATIONS. REFER TO FLOWKIT DRAWINGS FOR ADDITIONAL DETAILS.



AS WITH ALL OPEN TOP BIORETENTION SYSTEMS, FILTERRA BIOSCAPE SYSTEM IS OPEN TO THE ATMOSPHERE WITH A MEDIA SURFACE RECESSED BELOW FINISHED GRADE. CONTRACTOR OR OWNER IS RESPONSIBLE FOR PROVIDING ANY REQUIRED SAFETY MEASURES AROUND SYSTEM PERIMETER. TO MAINTAIN AESTHETICS, REMOVAL OF HEAVY STORMWATER DEBRIS MAY BE NECESSARY BETWEEN REGULAR FILTERRA SYSTEM MAINTENANCE EVENTS.

PLAN VIEW



SECTION A-A VIEW

BILL OF MATERIALS

COUNT	DESCRIPTION	INSTALLED BY
X	FILTERRA SURFACE AREA (SF)	CONTRACTOR
X	MULCH VOLUME (CY)	CONTRACTOR
XX	FILTERRA MEDIA VOLUME (CY)	CONTRACTOR
X	1/2" #4 ROUND AGGREGATE UNDERDRAIN STONE (CY)	CONTRACTOR
X	ENERGY DISSIPATION ROCK (CY)	CONTRACTOR
X	EROSION CONTROL (LF)	CONTRACTOR
X	FILTERRA FLOWKIT	CONTRACTOR

PLANTING SCHEDULE

*NOTE: PLANTS PROVIDED BY OTHERS

QUANTITY	FILTERRA BIOSCAPE SYSTEM PLANT PALETTE

GENERAL NOTES

1. CONTRACTOR SHALL CONTACT CONTECH TO COORDINATE DELIVERY AND SUPERVISION OF PLACEMENT OF FILTERRA BIOSCAPE SYSTEM COMPONENTS (ACTIVATION). CONTRACTOR SHALL COMPLETE ITEMS IN THE LIST OF CONTRACTOR INSTALLATION RESPONSIBILITIES LISTED ON THIS DETAIL BEFORE CONTECH'S REPRESENTATIVE ATTENDS AND SUPERVISES THE ACTIVATION OF THE BIOSCAPE SYSTEM.
2. PERFORM FILTERRA BIOSCAPE SYSTEM EXCAVATION ONLY AFTER ALL THE CONTRIBUTING DRAINAGE AREAS ARE PERMANENTLY STABILIZED. DO NOT CONSTRUCT FILTERRA BIOSCAPE SYSTEM IN AN AREA USED AS EROSION AND SEDIMENT CONTROL FACILITIES. DO NOT STOCKPILE MATERIALS NOR STORE EQUIPMENT IN THIS AREA.
3. USE METHODS OF EXCAVATION THAT MINIMIZE COMPACTION OF THE UNDERLYING SOIL UNLESS THE SYSTEM IS TO BE LINED.
4. CONTRACTOR SHALL COORDINATE WITH CONTECH BEFORE THE FILTERRA BIOSCAPE SYSTEM AREA IS EXCAVATED TO MINIMIZE TIME BETWEEN EXCAVATION AND DELIVERY AND ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY STANDING WATER THAT ACCUMULATES IN THE EXCAVATED AREA MUST BE REMOVED BY THE CONTRACTOR BEFORE CONTECH CAN PROVIDE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM. ANY ADDITIONAL EXCAVATION WILL BE THE RESPONSIBILITY OF THE CONTRACTOR. EXCAVATION DIMENSIONS SHOULD BE PROVIDED TO CONTECH IN THE ACTIVATION REQUEST CHECKLIST.
5. CONTRACTOR SHALL PROVIDE ACCESS TO THE EXCAVATED AREA(S) FOR USE DURING THE ACTIVATION OF THE FILTERRA BIOSCAPE SYSTEM(S). ACCESS SHALL NOT PROHIBIT LIGHT DUTY EQUIPMENT THAT MAY BE USED TO INSTALL THE COMPONENTS (STONE, MEDIA, ETC). THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY RE-STABILIZATION THAT MAY BE REQUIRED AFTER THE FILTERRA BIOSCAPE SYSTEM ACTIVATION.
6. CONTECH AND/OR ITS REPRESENTATIVES MUST BE SCHEDULED TO BE ON SITE FOR THE LIST ENTITLED CONTRACTOR ACTIVATION RESPONSIBILITIES.

CONTRACTOR SITE PREPARATION RESPONSIBILITIES AS DENOTED BY (X) ON THIS DETAIL:

- (A.) CONTRACTOR SHALL INSTALL PIPE OR SWALE THAT CONVEYS INFLUENT FLOWS AS WELL AS ANY REQUIRED INLET AND OUTLET STRUCTURES.
- (B.) CONTRACTOR SHALL PROVIDE BYPASS PIPE AND RISER OR OTHER STRUCTURE AS SHOWN ON PLANS. THE BYPASS PIPE SHALL BE INSTALLED WITH WYE(S), OR OTHER PIPE FITTINGS, AND WITH REDUCER COUPLING(S) FOR CONNECTION OF UNDERDRAIN PIPE, PER PLANS. PIPES SHALL BE INSTALLED TO PROMOTE POSITIVE FLOW FROM THE FILTERRA BIOSCAPE SYSTEM.
- (C.) IF REQUIRED, CONTRACTOR TO PROVIDE SHOULDER ACCORDING TO DIMENSION AND SLOPE SHOWN ON PLANS OR AS DESIGNED BY ENGINEER OF RECORD. SLOPE FROM SHOULDER TO FILTERRA BIOSCAPE SYSTEM SURFACE AREA SHALL NOT EXCEED 3:1. SOD IS REQUIRED TO STABILIZE SIDE SLOPES OR ADJACENT GRADE.
- (D.) CONTRACTOR TO EXCAVATE MEDIA AREA CORRESPONDING TO THE SIZE OF THE FILTERRA BIOSCAPE SYSTEM SURFACE AREA AS SHOWN ON DETAIL AND ON PLAN SHEETS.
- (E.) CONTRACTOR SHALL EXCAVATE VERTICALLY FROM BOTTOM OF UNDERDRAIN STONE, OR DRAINAGE STONE, IF REQUIRED, TO ELEVATION OF MULCH AS SHOWN ON THIS DETAIL .
- (F.) CONTRACTOR TO PROVIDE AND INSTALL ANY GEOTEXTILE OR IMPERMEABLE LINER FOR BOTTOM OF THE FILTERRA BIOSCAPE SYSTEM IF REQUIRED PER THE PLANS.
- (G.) CONTRACTOR TO PROVIDE AND INSTALL ANY ADDITIONAL DRAINAGE STONE BELOW THE FILTERRA BIOSCAPE SYSTEM AS CALLED OUT ON THE PLANS.

CONTRACTOR ACTIVATION RESPONSIBILITIES AS DENOTED BY (#) ON THIS DETAIL:

1. PLACE GEOTEXTILE FABRIC ALONG THE PERIMETER OF THE FILTERRA BIOSCAPE SYSTEM EXCAVATION.
2. PLACE 10" OF UNDERDRAIN STONE - 2" UNDER THE PIPING, 6" AROUND THE PIPING AND 2" ABOVE THE PIPING USING LIGHT DUTY EQUIPMENT ONLY.
3. PLACE 6" UNDERDRAIN PIPING UNLESS OTHERWISE APPROVED BY CONTECH, ASSOCIATED PIPING AND FITTINGS/ELBOWS TO CONNECT TO THE PIPING/FITTING(S) THAT IS PROVIDED BY CONTRACTOR (SEE CONTRACTOR INSTALLATION RESPONSIBILITIES THIS DETAIL).
4. PLACE 21" FILTERRA MEDIA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MEDIA.
5. PLACE 3" DOUBLE SHREDDED HARDWOOD MULCH OVER ENTIRE FILTERRA BIOSCAPE SYSTEM SURFACE AREA USING LIGHT DUTY EQUIPMENT ONLY. DO NOT COMPACT MULCH.
6. PROVIDE AND PLANT VEGETATION AS INDICATED IN TABLE ON THIS DETAIL OR ON SITE PLANS.
7. PLACE ENERGY DISSIPATION ROCK APRON AS DESIGNED AND INDICATED ON THIS DETAIL OR PER ENGINEER OF RECORD PLANS.
8. PLACE CLEANOUT ADAPTER, PLUG AND PIPING.
9. PLACE ADDITIONAL EROSION CONTROL AROUND FILTERRA BIOSCAPE SYSTEM (IF REQUIRED).

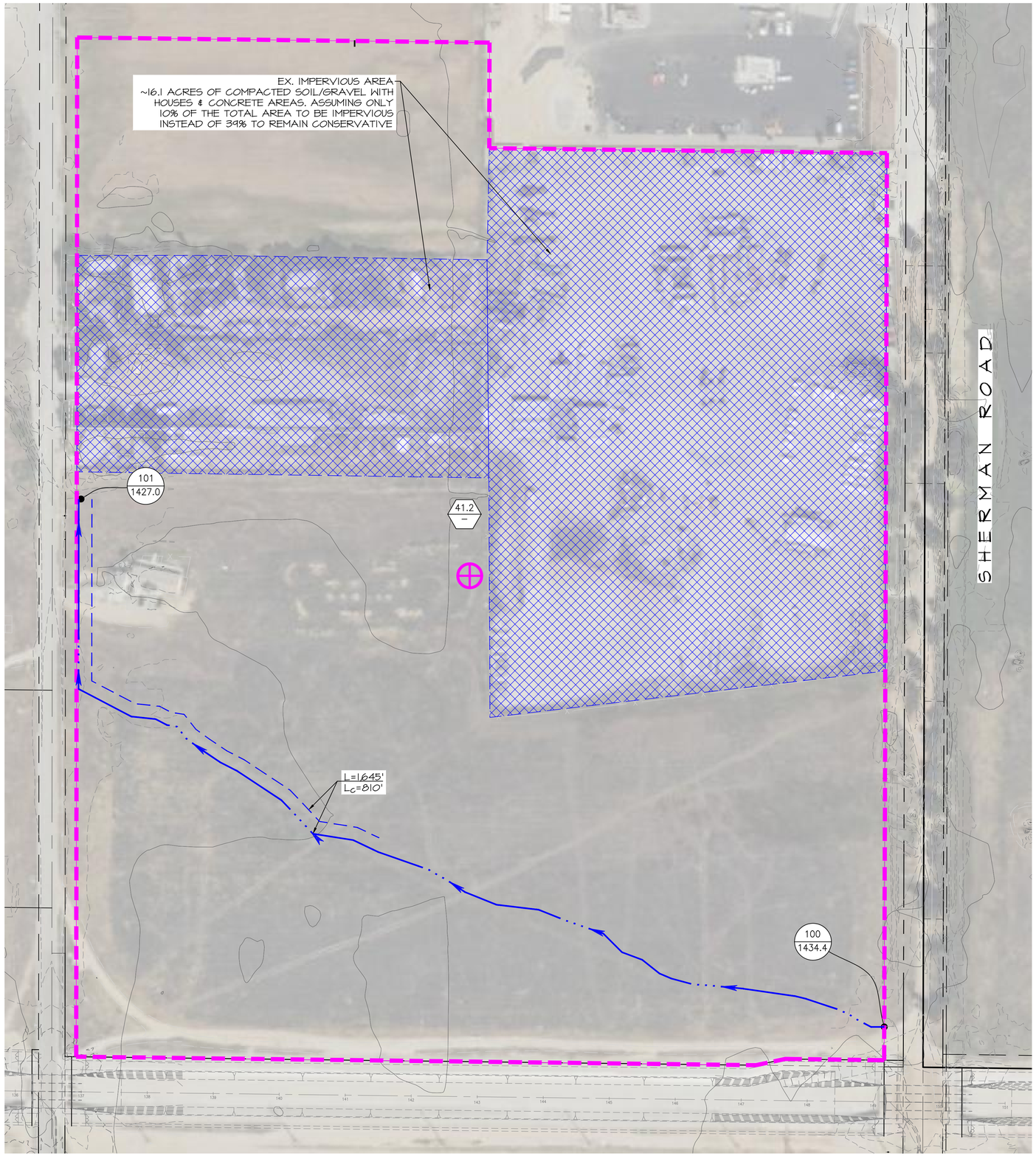
CONTECH ENGINEERED SOLUTIONS LLC
www.ContechES.com
9025 Centre Pointe Dr., Suite 400, West Chester, OH 45069
800-338-1122 513-645-7000 513-645-7993 FAX

FILTERRA BIOSCAPE™ SYSTEM STANDARD DETAIL

I:\COMMON\CAD\TREATMENT\54 FILTERRA\40 STANDARD DRAWINGS\FTBS - BIOSCAPE SYSTEM (BOXLESS)\DWG\FILTERRA BIOSCAPE SUPERVISED SYSTEM - STD DETAIL.DWG 5/21/2020 8:57 AM

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / Lc=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION, NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N W E S

1" = 80'

80 0 80 160 240

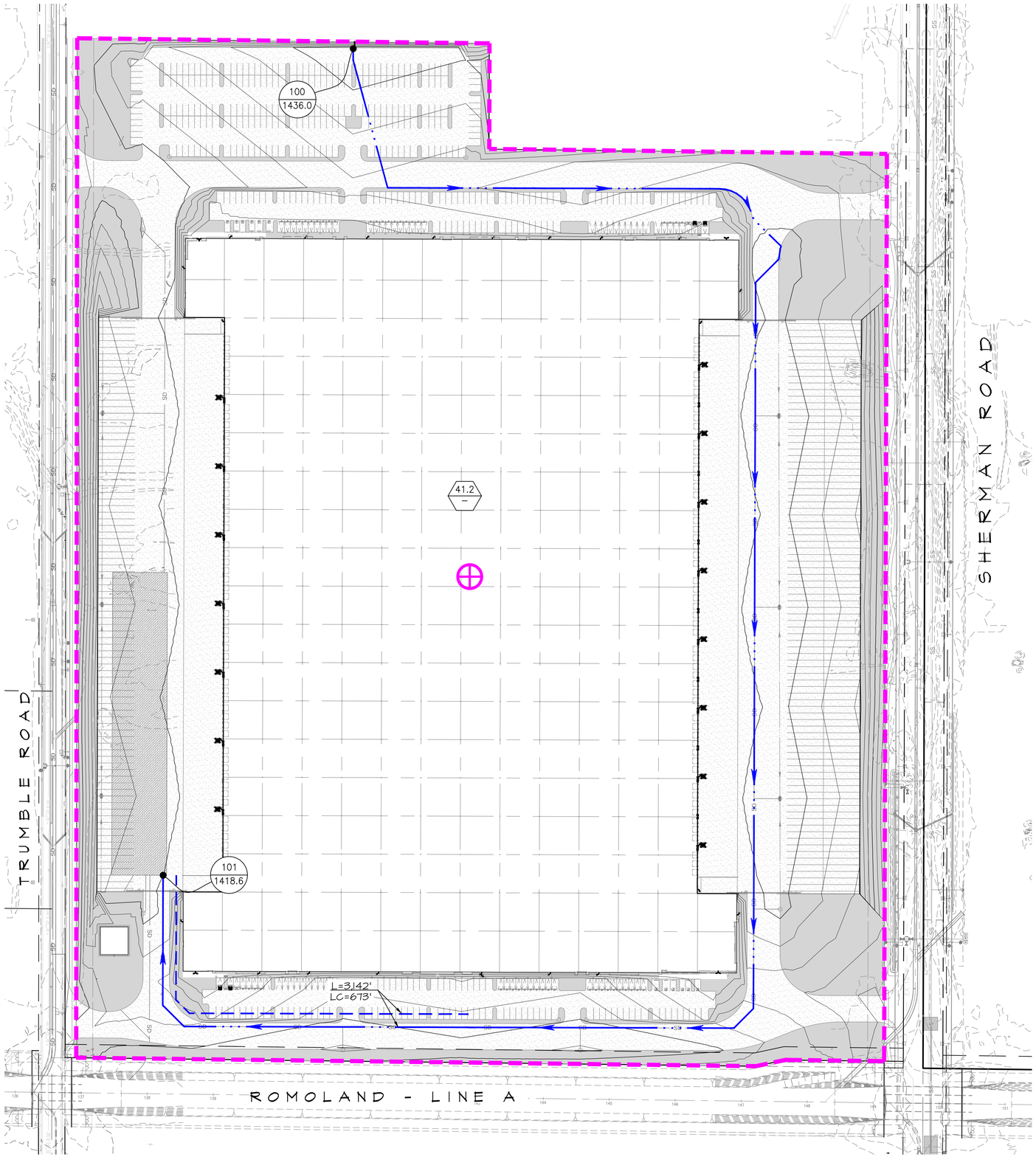
PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH
EXISTING CONDITION
HERITAGE VALLEY BUSINESS CENTER

SCALE: 1"=80'	ALBERT A. WEBB ASSOCIATES	ENGINEERING CONSULTANTS 3788 McCRAY STREET RIVERSIDE, CA. 92506 PH. (951) 686-1070 FAX (951) 788-1256	W.O. 24-0564
DATE: 9/24/24			SHEET 1
DESIGNED: MJS			OF 2 SHEETS
CHECKED: JSL			
PLN CK REF:			DWG. NO.
F.B.			

H:\2023\23-3015\DRAINAGE\ENTITLEMENT (ETHANAC BUSINESS PARK)\HYD\DWG FOLDER\24-0562-PHYD-UH.DWG 9/24/2024 9:57:11 AM



LEGEND

- DRAINAGE MANAGEMENT BOUNDARY
- FLOW DIRECTION
- L=14XX' / LC=1000' — LONGEST FLOW PATH CENTROIDAL LENGTH
- 101 / 14xx — NODE DESIGNATION NODE ELEVATION
- 5.0 — WATERSHED AREA (ACRES)
- CENTROID

N
W E
S

1" = 80'

80 0 80 160 240

PRELIMINARY

CITY OF MENIFEE

UNIT HYDROGRAPH DEVELOPED CONDITION HERITAGE VALLEY BUSINESS CENTER

SCALE: 1"=80'	W.O. 24-0564
DATE: 9/24/24	SHEET 2
DESIGNED: MJS	OF 2 SHEETS
CHECKED: JSL	DWG. NO.
PLN CK REF:	
F.B.	

ALBERT A. WEBB ASSOCIATES
ENGINEERING CONSULTANTS
3788 McCRAY STREET
RIVERSIDE, CA. 92506
PH. (951) 686-1070
FAX (951) 788-1256

H:\2023\23-3015\DRAINAGE\ENTITLEMENT (ETHANAC BUSINESS PARK)\HYD\DWG FOLDER\24-0562-PHYD-UH.DWG 9/24/2024 9:55:52 AM

U n i t H y d r o g r a p h A n a l y s i s

Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2018, Version 9.0
Study date 09/24/24 File: ONSITEPRE242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6584

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

24-0564 - HERITAGE VALLEY BUSINESS CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
EXISITNG CONDITION, 2-YEAR 24-HOUR
FN: ONSITEPRE242.OUT- MJS

Drainage Area = 41.20(Ac.) = 0.064 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 41.20(Ac.) = 0.064 Sq. Mi.
Length along longest watercourse = 1645.00(Ft.)
Length along longest watercourse measured to centroid = 810.00(Ft.)
Length along longest watercourse = 0.312 Mi.
Length along longest watercourse measured to centroid = 0.153 Mi.
Difference in elevation = 7.40(Ft.)
Slope along watercourse = 23.7520 Ft./Mi.
Average Manning's 'N' = 0.030
Lag time = 0.124 Hr.
Lag time = 7.45 Min.
25% of lag time = 1.86 Min.
40% of lag time = 2.98 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	1.30	53.56

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	4.50	185.40

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.300(In)
Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.300(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.300(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %

```
   41.200           86.00         0.100
 Total Area Entered =     41.20(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
86.0  71.6      0.343     0.100        0.312       1.000      0.312
                                                 Sum (F) =   0.312
Area averaged mean soil loss (F) (In/Hr) =  0.312
Minimum soil loss rate ((In/Hr)) =  0.156
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.820
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                       VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083         67.097          9.896              4.109
    2   0.167        134.194         38.517             15.993
    3   0.250        201.291         24.150             10.028
    4   0.333        268.388          9.307              3.864
    5   0.417        335.485          5.652              2.347
    6   0.500        402.582          3.790              1.574
    7   0.583        469.680          2.539              1.054
    8   0.667        536.777          1.966              0.816
    9   0.750        603.874          1.444              0.600
   10   0.833        670.971          1.051              0.436
   11   0.917        738.068          0.734              0.305
   12   1.000        805.165          0.955              0.396
                                Sum = 100.000   Sum=      41.522
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
   1   0.08     0.07      0.010       (  0.554)       0.009        0.002
   2   0.17     0.07      0.010       (  0.551)       0.009        0.002
   3   0.25     0.07      0.010       (  0.549)       0.009        0.002
   4   0.33     0.10      0.016       (  0.547)       0.013        0.003
   5   0.42     0.10      0.016       (  0.545)       0.013        0.003
   6   0.50     0.10      0.016       (  0.543)       0.013        0.003
   7   0.58     0.10      0.016       (  0.541)       0.013        0.003
   8   0.67     0.10      0.016       (  0.539)       0.013        0.003
   9   0.75     0.10      0.016       (  0.537)       0.013        0.003
  10   0.83     0.13      0.021       (  0.534)       0.017        0.004
  11   0.92     0.13      0.021       (  0.532)       0.017        0.004
  12   1.00     0.13      0.021       (  0.530)       0.017        0.004
  13   1.08     0.10      0.016       (  0.528)       0.013        0.003
  14   1.17     0.10      0.016       (  0.526)       0.013        0.003
  15   1.25     0.10      0.016       (  0.524)       0.013        0.003
  16   1.33     0.10      0.016       (  0.522)       0.013        0.003
  17   1.42     0.10      0.016       (  0.520)       0.013        0.003
  18   1.50     0.10      0.016       (  0.518)       0.013        0.003
  19   1.58     0.10      0.016       (  0.516)       0.013        0.003
  20   1.67     0.10      0.016       (  0.514)       0.013        0.003
  21   1.75     0.10      0.016       (  0.511)       0.013        0.003
  22   1.83     0.13      0.021       (  0.509)       0.017        0.004
  23   1.92     0.13      0.021       (  0.507)       0.017        0.004
  24   2.00     0.13      0.021       (  0.505)       0.017        0.004
  25   2.08     0.13      0.021       (  0.503)       0.017        0.004
  26   2.17     0.13      0.021       (  0.501)       0.017        0.004
```

27	2.25	0.13	0.021	(0.499)	0.017	0.004
28	2.33	0.13	0.021	(0.497)	0.017	0.004
29	2.42	0.13	0.021	(0.495)	0.017	0.004
30	2.50	0.13	0.021	(0.493)	0.017	0.004
31	2.58	0.17	0.026	(0.491)	0.021	0.005
32	2.67	0.17	0.026	(0.489)	0.021	0.005
33	2.75	0.17	0.026	(0.487)	0.021	0.005
34	2.83	0.17	0.026	(0.485)	0.021	0.005
35	2.92	0.17	0.026	(0.483)	0.021	0.005
36	3.00	0.17	0.026	(0.481)	0.021	0.005
37	3.08	0.17	0.026	(0.479)	0.021	0.005
38	3.17	0.17	0.026	(0.477)	0.021	0.005
39	3.25	0.17	0.026	(0.475)	0.021	0.005
40	3.33	0.17	0.026	(0.473)	0.021	0.005
41	3.42	0.17	0.026	(0.471)	0.021	0.005
42	3.50	0.17	0.026	(0.469)	0.021	0.005
43	3.58	0.17	0.026	(0.467)	0.021	0.005
44	3.67	0.17	0.026	(0.465)	0.021	0.005
45	3.75	0.17	0.026	(0.463)	0.021	0.005
46	3.83	0.20	0.031	(0.461)	0.026	0.006
47	3.92	0.20	0.031	(0.459)	0.026	0.006
48	4.00	0.20	0.031	(0.457)	0.026	0.006
49	4.08	0.20	0.031	(0.456)	0.026	0.006
50	4.17	0.20	0.031	(0.454)	0.026	0.006
51	4.25	0.20	0.031	(0.452)	0.026	0.006
52	4.33	0.23	0.036	(0.450)	0.030	0.007
53	4.42	0.23	0.036	(0.448)	0.030	0.007
54	4.50	0.23	0.036	(0.446)	0.030	0.007
55	4.58	0.23	0.036	(0.444)	0.030	0.007
56	4.67	0.23	0.036	(0.442)	0.030	0.007
57	4.75	0.23	0.036	(0.440)	0.030	0.007
58	4.83	0.27	0.042	(0.438)	0.034	0.007
59	4.92	0.27	0.042	(0.436)	0.034	0.007
60	5.00	0.27	0.042	(0.434)	0.034	0.007
61	5.08	0.20	0.031	(0.433)	0.026	0.006
62	5.17	0.20	0.031	(0.431)	0.026	0.006
63	5.25	0.20	0.031	(0.429)	0.026	0.006
64	5.33	0.23	0.036	(0.427)	0.030	0.007
65	5.42	0.23	0.036	(0.425)	0.030	0.007
66	5.50	0.23	0.036	(0.423)	0.030	0.007
67	5.58	0.27	0.042	(0.421)	0.034	0.007
68	5.67	0.27	0.042	(0.420)	0.034	0.007
69	5.75	0.27	0.042	(0.418)	0.034	0.007
70	5.83	0.27	0.042	(0.416)	0.034	0.007
71	5.92	0.27	0.042	(0.414)	0.034	0.007
72	6.00	0.27	0.042	(0.412)	0.034	0.007
73	6.08	0.30	0.047	(0.410)	0.038	0.008
74	6.17	0.30	0.047	(0.408)	0.038	0.008
75	6.25	0.30	0.047	(0.407)	0.038	0.008
76	6.33	0.30	0.047	(0.405)	0.038	0.008
77	6.42	0.30	0.047	(0.403)	0.038	0.008
78	6.50	0.30	0.047	(0.401)	0.038	0.008
79	6.58	0.33	0.052	(0.399)	0.043	0.009
80	6.67	0.33	0.052	(0.398)	0.043	0.009
81	6.75	0.33	0.052	(0.396)	0.043	0.009
82	6.83	0.33	0.052	(0.394)	0.043	0.009
83	6.92	0.33	0.052	(0.392)	0.043	0.009
84	7.00	0.33	0.052	(0.390)	0.043	0.009
85	7.08	0.33	0.052	(0.389)	0.043	0.009
86	7.17	0.33	0.052	(0.387)	0.043	0.009
87	7.25	0.33	0.052	(0.385)	0.043	0.009
88	7.33	0.37	0.057	(0.383)	0.047	0.010
89	7.42	0.37	0.057	(0.382)	0.047	0.010
90	7.50	0.37	0.057	(0.380)	0.047	0.010
91	7.58	0.40	0.062	(0.378)	0.051	0.011
92	7.67	0.40	0.062	(0.376)	0.051	0.011
93	7.75	0.40	0.062	(0.375)	0.051	0.011
94	7.83	0.43	0.068	(0.373)	0.055	0.012
95	7.92	0.43	0.068	(0.371)	0.055	0.012

96	8.00	0.43	0.068	(0.370)	0.055	0.012
97	8.08	0.50	0.078	(0.368)	0.064	0.014
98	8.17	0.50	0.078	(0.366)	0.064	0.014
99	8.25	0.50	0.078	(0.364)	0.064	0.014
100	8.33	0.50	0.078	(0.363)	0.064	0.014
101	8.42	0.50	0.078	(0.361)	0.064	0.014
102	8.50	0.50	0.078	(0.359)	0.064	0.014
103	8.58	0.53	0.083	(0.358)	0.068	0.015
104	8.67	0.53	0.083	(0.356)	0.068	0.015
105	8.75	0.53	0.083	(0.354)	0.068	0.015
106	8.83	0.57	0.088	(0.353)	0.072	0.016
107	8.92	0.57	0.088	(0.351)	0.072	0.016
108	9.00	0.57	0.088	(0.349)	0.072	0.016
109	9.08	0.63	0.099	(0.348)	0.081	0.018
110	9.17	0.63	0.099	(0.346)	0.081	0.018
111	9.25	0.63	0.099	(0.344)	0.081	0.018
112	9.33	0.67	0.104	(0.343)	0.085	0.019
113	9.42	0.67	0.104	(0.341)	0.085	0.019
114	9.50	0.67	0.104	(0.339)	0.085	0.019
115	9.58	0.70	0.109	(0.338)	0.090	0.020
116	9.67	0.70	0.109	(0.336)	0.090	0.020
117	9.75	0.70	0.109	(0.335)	0.090	0.020
118	9.83	0.73	0.114	(0.333)	0.094	0.021
119	9.92	0.73	0.114	(0.331)	0.094	0.021
120	10.00	0.73	0.114	(0.330)	0.094	0.021
121	10.08	0.50	0.078	(0.328)	0.064	0.014
122	10.17	0.50	0.078	(0.327)	0.064	0.014
123	10.25	0.50	0.078	(0.325)	0.064	0.014
124	10.33	0.50	0.078	(0.323)	0.064	0.014
125	10.42	0.50	0.078	(0.322)	0.064	0.014
126	10.50	0.50	0.078	(0.320)	0.064	0.014
127	10.58	0.67	0.104	(0.319)	0.085	0.019
128	10.67	0.67	0.104	(0.317)	0.085	0.019
129	10.75	0.67	0.104	(0.316)	0.085	0.019
130	10.83	0.67	0.104	(0.314)	0.085	0.019
131	10.92	0.67	0.104	(0.312)	0.085	0.019
132	11.00	0.67	0.104	(0.311)	0.085	0.019
133	11.08	0.63	0.099	(0.309)	0.081	0.018
134	11.17	0.63	0.099	(0.308)	0.081	0.018
135	11.25	0.63	0.099	(0.306)	0.081	0.018
136	11.33	0.63	0.099	(0.305)	0.081	0.018
137	11.42	0.63	0.099	(0.303)	0.081	0.018
138	11.50	0.63	0.099	(0.302)	0.081	0.018
139	11.58	0.57	0.088	(0.300)	0.072	0.016
140	11.67	0.57	0.088	(0.299)	0.072	0.016
141	11.75	0.57	0.088	(0.297)	0.072	0.016
142	11.83	0.60	0.094	(0.296)	0.077	0.017
143	11.92	0.60	0.094	(0.294)	0.077	0.017
144	12.00	0.60	0.094	(0.293)	0.077	0.017
145	12.08	0.83	0.130	(0.291)	0.107	0.023
146	12.17	0.83	0.130	(0.290)	0.107	0.023
147	12.25	0.83	0.130	(0.289)	0.107	0.023
148	12.33	0.87	0.135	(0.287)	0.111	0.024
149	12.42	0.87	0.135	(0.286)	0.111	0.024
150	12.50	0.87	0.135	(0.284)	0.111	0.024
151	12.58	0.93	0.146	(0.283)	0.119	0.026
152	12.67	0.93	0.146	(0.281)	0.119	0.026
153	12.75	0.93	0.146	(0.280)	0.119	0.026
154	12.83	0.97	0.151	(0.279)	0.124	0.027
155	12.92	0.97	0.151	(0.277)	0.124	0.027
156	13.00	0.97	0.151	(0.276)	0.124	0.027
157	13.08	1.13	0.177	(0.274)	0.145	0.032
158	13.17	1.13	0.177	(0.273)	0.145	0.032
159	13.25	1.13	0.177	(0.272)	0.145	0.032
160	13.33	1.13	0.177	(0.270)	0.145	0.032
161	13.42	1.13	0.177	(0.269)	0.145	0.032
162	13.50	1.13	0.177	(0.267)	0.145	0.032
163	13.58	0.77	0.120	(0.266)	0.098	0.022
164	13.67	0.77	0.120	(0.265)	0.098	0.022

165	13.75	0.77	0.120	(0.263)	0.098	0.022
166	13.83	0.77	0.120	(0.262)	0.098	0.022
167	13.92	0.77	0.120	(0.261)	0.098	0.022
168	14.00	0.77	0.120	(0.259)	0.098	0.022
169	14.08	0.90	0.140	(0.258)	0.115	0.025
170	14.17	0.90	0.140	(0.257)	0.115	0.025
171	14.25	0.90	0.140	(0.255)	0.115	0.025
172	14.33	0.87	0.135	(0.254)	0.111	0.024
173	14.42	0.87	0.135	(0.253)	0.111	0.024
174	14.50	0.87	0.135	(0.252)	0.111	0.024
175	14.58	0.87	0.135	(0.250)	0.111	0.024
176	14.67	0.87	0.135	(0.249)	0.111	0.024
177	14.75	0.87	0.135	(0.248)	0.111	0.024
178	14.83	0.83	0.130	(0.246)	0.107	0.023
179	14.92	0.83	0.130	(0.245)	0.107	0.023
180	15.00	0.83	0.130	(0.244)	0.107	0.023
181	15.08	0.80	0.125	(0.243)	0.102	0.022
182	15.17	0.80	0.125	(0.241)	0.102	0.022
183	15.25	0.80	0.125	(0.240)	0.102	0.022
184	15.33	0.77	0.120	(0.239)	0.098	0.022
185	15.42	0.77	0.120	(0.238)	0.098	0.022
186	15.50	0.77	0.120	(0.236)	0.098	0.022
187	15.58	0.63	0.099	(0.235)	0.081	0.018
188	15.67	0.63	0.099	(0.234)	0.081	0.018
189	15.75	0.63	0.099	(0.233)	0.081	0.018
190	15.83	0.63	0.099	(0.232)	0.081	0.018
191	15.92	0.63	0.099	(0.230)	0.081	0.018
192	16.00	0.63	0.099	(0.229)	0.081	0.018
193	16.08	0.13	0.021	(0.228)	0.017	0.004
194	16.17	0.13	0.021	(0.227)	0.017	0.004
195	16.25	0.13	0.021	(0.226)	0.017	0.004
196	16.33	0.13	0.021	(0.225)	0.017	0.004
197	16.42	0.13	0.021	(0.224)	0.017	0.004
198	16.50	0.13	0.021	(0.222)	0.017	0.004
199	16.58	0.10	0.016	(0.221)	0.013	0.003
200	16.67	0.10	0.016	(0.220)	0.013	0.003
201	16.75	0.10	0.016	(0.219)	0.013	0.003
202	16.83	0.10	0.016	(0.218)	0.013	0.003
203	16.92	0.10	0.016	(0.217)	0.013	0.003
204	17.00	0.10	0.016	(0.216)	0.013	0.003
205	17.08	0.17	0.026	(0.215)	0.021	0.005
206	17.17	0.17	0.026	(0.214)	0.021	0.005
207	17.25	0.17	0.026	(0.212)	0.021	0.005
208	17.33	0.17	0.026	(0.211)	0.021	0.005
209	17.42	0.17	0.026	(0.210)	0.021	0.005
210	17.50	0.17	0.026	(0.209)	0.021	0.005
211	17.58	0.17	0.026	(0.208)	0.021	0.005
212	17.67	0.17	0.026	(0.207)	0.021	0.005
213	17.75	0.17	0.026	(0.206)	0.021	0.005
214	17.83	0.13	0.021	(0.205)	0.017	0.004
215	17.92	0.13	0.021	(0.204)	0.017	0.004
216	18.00	0.13	0.021	(0.203)	0.017	0.004
217	18.08	0.13	0.021	(0.202)	0.017	0.004
218	18.17	0.13	0.021	(0.201)	0.017	0.004
219	18.25	0.13	0.021	(0.200)	0.017	0.004
220	18.33	0.13	0.021	(0.199)	0.017	0.004
221	18.42	0.13	0.021	(0.198)	0.017	0.004
222	18.50	0.13	0.021	(0.197)	0.017	0.004
223	18.58	0.10	0.016	(0.196)	0.013	0.003
224	18.67	0.10	0.016	(0.195)	0.013	0.003
225	18.75	0.10	0.016	(0.194)	0.013	0.003
226	18.83	0.07	0.010	(0.193)	0.009	0.002
227	18.92	0.07	0.010	(0.193)	0.009	0.002
228	19.00	0.07	0.010	(0.192)	0.009	0.002
229	19.08	0.10	0.016	(0.191)	0.013	0.003
230	19.17	0.10	0.016	(0.190)	0.013	0.003
231	19.25	0.10	0.016	(0.189)	0.013	0.003
232	19.33	0.13	0.021	(0.188)	0.017	0.004
233	19.42	0.13	0.021	(0.187)	0.017	0.004

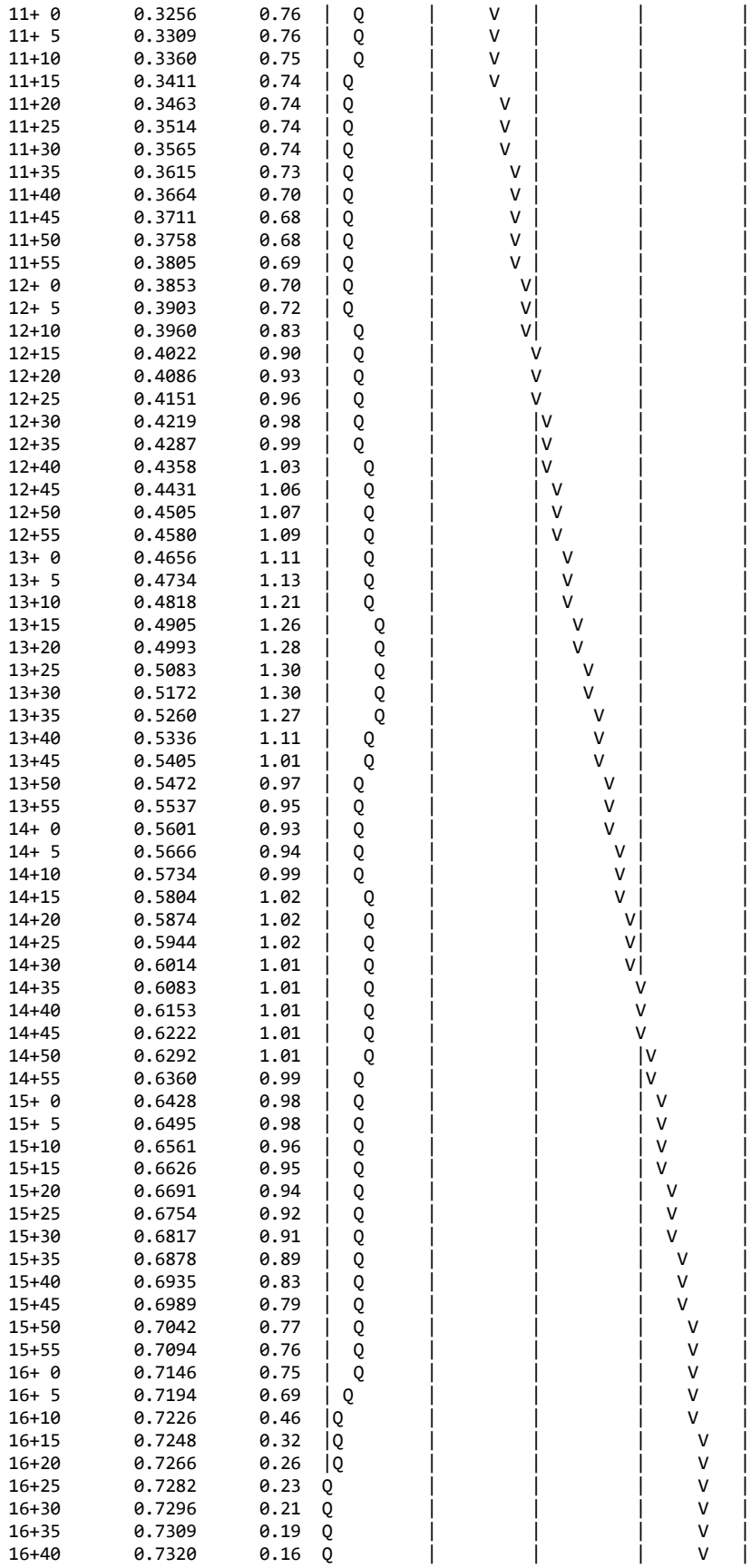
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234  19.50     0.13      0.021       (  0.186)       0.017        0.004
235  19.58     0.10      0.016       (  0.185)       0.013        0.003
236  19.67     0.10      0.016       (  0.185)       0.013        0.003
237  19.75     0.10      0.016       (  0.184)       0.013        0.003
238  19.83     0.07      0.010       (  0.183)       0.009        0.002
239  19.92     0.07      0.010       (  0.182)       0.009        0.002
240  20.00     0.07      0.010       (  0.181)       0.009        0.002
241  20.08     0.10      0.016       (  0.181)       0.013        0.003
242  20.17     0.10      0.016       (  0.180)       0.013        0.003
243  20.25     0.10      0.016       (  0.179)       0.013        0.003
244  20.33     0.10      0.016       (  0.178)       0.013        0.003
245  20.42     0.10      0.016       (  0.177)       0.013        0.003
246  20.50     0.10      0.016       (  0.177)       0.013        0.003
247  20.58     0.10      0.016       (  0.176)       0.013        0.003
248  20.67     0.10      0.016       (  0.175)       0.013        0.003
249  20.75     0.10      0.016       (  0.174)       0.013        0.003
250  20.83     0.07      0.010       (  0.174)       0.009        0.002
251  20.92     0.07      0.010       (  0.173)       0.009        0.002
252  21.00     0.07      0.010       (  0.172)       0.009        0.002
253  21.08     0.10      0.016       (  0.172)       0.013        0.003
254  21.17     0.10      0.016       (  0.171)       0.013        0.003
255  21.25     0.10      0.016       (  0.170)       0.013        0.003
256  21.33     0.07      0.010       (  0.170)       0.009        0.002
257  21.42     0.07      0.010       (  0.169)       0.009        0.002
258  21.50     0.07      0.010       (  0.168)       0.009        0.002
259  21.58     0.10      0.016       (  0.168)       0.013        0.003
260  21.67     0.10      0.016       (  0.167)       0.013        0.003
261  21.75     0.10      0.016       (  0.167)       0.013        0.003
262  21.83     0.07      0.010       (  0.166)       0.009        0.002
263  21.92     0.07      0.010       (  0.165)       0.009        0.002
264  22.00     0.07      0.010       (  0.165)       0.009        0.002
265  22.08     0.10      0.016       (  0.164)       0.013        0.003
266  22.17     0.10      0.016       (  0.164)       0.013        0.003
267  22.25     0.10      0.016       (  0.163)       0.013        0.003
268  22.33     0.07      0.010       (  0.163)       0.009        0.002
269  22.42     0.07      0.010       (  0.162)       0.009        0.002
270  22.50     0.07      0.010       (  0.162)       0.009        0.002
271  22.58     0.07      0.010       (  0.161)       0.009        0.002
272  22.67     0.07      0.010       (  0.161)       0.009        0.002
273  22.75     0.07      0.010       (  0.160)       0.009        0.002
274  22.83     0.07      0.010       (  0.160)       0.009        0.002
275  22.92     0.07      0.010       (  0.160)       0.009        0.002
276  23.00     0.07      0.010       (  0.159)       0.009        0.002
277  23.08     0.07      0.010       (  0.159)       0.009        0.002
278  23.17     0.07      0.010       (  0.158)       0.009        0.002
279  23.25     0.07      0.010       (  0.158)       0.009        0.002
280  23.33     0.07      0.010       (  0.158)       0.009        0.002
281  23.42     0.07      0.010       (  0.158)       0.009        0.002
282  23.50     0.07      0.010       (  0.157)       0.009        0.002
283  23.58     0.07      0.010       (  0.157)       0.009        0.002
284  23.67     0.07      0.010       (  0.157)       0.009        0.002
285  23.75     0.07      0.010       (  0.157)       0.009        0.002
286  23.83     0.07      0.010       (  0.156)       0.009        0.002
287  23.92     0.07      0.010       (  0.156)       0.009        0.002
288  24.00     0.07      0.010       (  0.156)       0.009        0.002
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =     2.8
       Flood volume = Effective rainfall      0.23(In)
        times area      41.2(Ac.)/[(In)/(Ft.)] =       0.8(Ac.Ft)
       Total soil loss =      1.07(In)
       Total soil loss =     3.660(Ac.Ft)
       Total rainfall =      1.30(In)
       Flood volume =       34993.3 Cubic Feet
       Total soil loss =      159413.9 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      1.304(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                          24 - H O U R    S T O R M
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R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.01	Q				
0+10	0.0003	0.04	Q				
0+15	0.0007	0.06	Q				
0+20	0.0012	0.07	Q				
0+25	0.0018	0.09	Q				
0+30	0.0024	0.10	Q				
0+35	0.0032	0.10	Q				
0+40	0.0039	0.11	Q				
0+45	0.0047	0.11	Q				
0+50	0.0055	0.12	Q				
0+55	0.0064	0.13	Q				
1+ 0	0.0074	0.14	Q				
1+ 5	0.0084	0.14	Q				
1+10	0.0093	0.13	Q				
1+15	0.0101	0.12	Q				
1+20	0.0110	0.12	Q				
1+25	0.0118	0.12	Q				
1+30	0.0126	0.12	Q				
1+35	0.0134	0.12	Q				
1+40	0.0143	0.12	Q				
1+45	0.0151	0.12	Q				
1+50	0.0159	0.12	Q				
1+55	0.0168	0.14	Q				
2+ 0	0.0178	0.14	Q				
2+ 5	0.0189	0.15	Q				
2+10	0.0199	0.15	Q				
2+15	0.0209	0.15	QV				
2+20	0.0220	0.15	QV				
2+25	0.0231	0.15	QV				
2+30	0.0241	0.15	QV				
2+35	0.0252	0.16	QV				
2+40	0.0264	0.17	QV				
2+45	0.0277	0.18	QV				
2+50	0.0290	0.19	QV				
2+55	0.0303	0.19	QV				
3+ 0	0.0316	0.19	QV				
3+ 5	0.0329	0.19	QV				
3+10	0.0342	0.19	QV				
3+15	0.0356	0.19	QV				
3+20	0.0369	0.19	QV				
3+25	0.0382	0.19	QV				
3+30	0.0396	0.19	QV				
3+35	0.0409	0.19	Q V				
3+40	0.0423	0.19	Q V				
3+45	0.0436	0.19	Q V				
3+50	0.0450	0.20	Q V				
3+55	0.0464	0.21	Q V				
4+ 0	0.0480	0.22	Q V				
4+ 5	0.0495	0.23	Q V				
4+10	0.0511	0.23	Q V				
4+15	0.0527	0.23	Q V				
4+20	0.0543	0.23	Q V				
4+25	0.0560	0.25	|QV				
4+30	0.0578	0.26	|QV				
4+35	0.0596	0.26	|QV				
4+40	0.0615	0.27	|Q V				
4+45	0.0633	0.27	|Q V				
4+50	0.0652	0.27	|Q V				
4+55	0.0672	0.29	|Q V				
5+ 0	0.0693	0.30	|Q V				
5+ 5	0.0713	0.30	|Q V				
5+10	0.0731	0.27	|Q V				

5+15	0.0749	0.25	Q V			
5+20	0.0766	0.25	Q V			
5+25	0.0784	0.26	Q V			
5+30	0.0802	0.27	Q V			
5+35	0.0821	0.27	Q V			
5+40	0.0841	0.29	Q V			
5+45	0.0862	0.30	Q V			
5+50	0.0882	0.30	Q V			
5+55	0.0903	0.31	Q V			
6+ 0	0.0925	0.31	Q V			
6+ 5	0.0946	0.31	Q V			
6+10	0.0969	0.33	Q V			
6+15	0.0992	0.34	Q V			
6+20	0.1015	0.34	Q V			
6+25	0.1039	0.34	Q V			
6+30	0.1063	0.35	Q V			
6+35	0.1087	0.35	Q V			
6+40	0.1113	0.37	Q V			
6+45	0.1138	0.38	Q V			
6+50	0.1165	0.38	Q V			
6+55	0.1191	0.38	Q V			
7+ 0	0.1218	0.39	Q V			
7+ 5	0.1244	0.39	Q V			
7+10	0.1271	0.39	Q V			
7+15	0.1298	0.39	Q V			
7+20	0.1325	0.39	Q V			
7+25	0.1353	0.41	Q V			
7+30	0.1381	0.42	Q V			
7+35	0.1411	0.42	Q V			
7+40	0.1441	0.44	Q V			
7+45	0.1472	0.45	Q V			
7+50	0.1504	0.46	Q V			
7+55	0.1537	0.48	Q V			
8+ 0	0.1571	0.49	Q V			
8+ 5	0.1605	0.50	Q V			
8+10	0.1642	0.54	Q V			
8+15	0.1681	0.56	Q V			
8+20	0.1720	0.57	Q V			
8+25	0.1759	0.57	Q V			
8+30	0.1799	0.58	Q V			
8+35	0.1839	0.58	Q V			
8+40	0.1880	0.60	Q V			
8+45	0.1922	0.61	Q V			
8+50	0.1964	0.62	Q V			
8+55	0.2008	0.64	Q V			
9+ 0	0.2053	0.65	Q V			
9+ 5	0.2098	0.66	Q V			
9+10	0.2146	0.69	Q V			
9+15	0.2195	0.71	Q V			
9+20	0.2245	0.73	Q V			
9+25	0.2296	0.75	Q V			
9+30	0.2349	0.76	Q V			
9+35	0.2402	0.77	Q V			
9+40	0.2456	0.79	Q V			
9+45	0.2511	0.80	Q V			
9+50	0.2567	0.81	Q V			
9+55	0.2624	0.83	Q V			
10+ 0	0.2682	0.84	Q V			
10+ 5	0.2738	0.82	Q V			
10+10	0.2787	0.72	Q V			
10+15	0.2832	0.65	Q V			
10+20	0.2876	0.63	Q V			
10+25	0.2918	0.62	Q V			
10+30	0.2960	0.61	Q V			
10+35	0.3002	0.62	Q V			
10+40	0.3050	0.69	Q V			
10+45	0.3100	0.73	Q V			
10+50	0.3152	0.75	Q V			
10+55	0.3204	0.76	Q V			



16+45	0.7330	0.14	Q	|	|	|	V |
16+50	0.7339	0.13	Q	|	|	|	V |
16+55	0.7348	0.13	Q	|	|	|	V |
17+ 0	0.7356	0.12	Q	|	|	|	V |
17+ 5	0.7365	0.13	Q	|	|	|	V |
17+10	0.7376	0.16	Q	|	|	|	V |
17+15	0.7388	0.17	Q	|	|	|	V |
17+20	0.7400	0.18	Q	|	|	|	V |
17+25	0.7413	0.19	Q	|	|	|	V |
17+30	0.7426	0.19	Q	|	|	|	V |
17+35	0.7439	0.19	Q	|	|	|	V |
17+40	0.7452	0.19	Q	|	|	|	V |
17+45	0.7465	0.19	Q	|	|	|	V |
17+50	0.7478	0.19	Q	|	|	|	V |
17+55	0.7490	0.17	Q	|	|	|	V |
18+ 0	0.7502	0.17	Q	|	|	|	V |
18+ 5	0.7513	0.16	Q	|	|	|	V |
18+10	0.7524	0.16	Q	|	|	|	V |
18+15	0.7535	0.16	Q	|	|	|	V |
18+20	0.7546	0.16	Q	|	|	|	V |
18+25	0.7557	0.16	Q	|	|	|	V |
18+30	0.7567	0.16	Q	|	|	|	V |
18+35	0.7578	0.15	Q	|	|	|	V |
18+40	0.7587	0.14	Q	|	|	|	V |
18+45	0.7596	0.13	Q	|	|	|	V |
18+50	0.7604	0.12	Q	|	|	|	V |
18+55	0.7611	0.10	Q	|	|	|	V |
19+ 0	0.7618	0.09	Q	|	|	|	V |
19+ 5	0.7624	0.09	Q	|	|	|	V |
19+10	0.7631	0.10	Q	|	|	|	V |
19+15	0.7639	0.11	Q	|	|	|	V |
19+20	0.7647	0.12	Q	|	|	|	V |
19+25	0.7656	0.13	Q	|	|	|	V |
19+30	0.7666	0.14	Q	|	|	|	V |
19+35	0.7676	0.14	Q	|	|	|	V |
19+40	0.7685	0.13	Q	|	|	|	V |
19+45	0.7693	0.12	Q	|	|	|	V |
19+50	0.7701	0.12	Q	|	|	|	V |
19+55	0.7708	0.10	Q	|	|	|	V |
20+ 0	0.7714	0.09	Q	|	|	|	V |
20+ 5	0.7720	0.09	Q	|	|	|	V |
20+10	0.7728	0.10	Q	|	|	|	V |
20+15	0.7735	0.11	Q	|	|	|	V |
20+20	0.7743	0.11	Q	|	|	|	V |
20+25	0.7751	0.11	Q	|	|	|	V |
20+30	0.7759	0.11	Q	|	|	|	V |
20+35	0.7767	0.11	Q	|	|	|	V |
20+40	0.7774	0.12	Q	|	|	|	V |
20+45	0.7782	0.12	Q	|	|	|	V |
20+50	0.7790	0.11	Q	|	|	|	V |
20+55	0.7797	0.10	Q	|	|	|	V |
21+ 0	0.7803	0.09	Q	|	|	|	V |
21+ 5	0.7809	0.09	Q	|	|	|	V |
21+10	0.7816	0.10	Q	|	|	|	V |
21+15	0.7824	0.11	Q	|	|	|	V |
21+20	0.7831	0.11	Q	|	|	|	V |
21+25	0.7838	0.09	Q	|	|	|	V|
21+30	0.7843	0.09	Q	|	|	|	V|
21+35	0.7849	0.09	Q	|	|	|	V|
21+40	0.7856	0.10	Q	|	|	|	V|
21+45	0.7864	0.11	Q	|	|	|	V|
21+50	0.7871	0.11	Q	|	|	|	V|
21+55	0.7878	0.09	Q	|	|	|	V|
22+ 0	0.7884	0.09	Q	|	|	|	V|
22+ 5	0.7890	0.09	Q	|	|	|	V|
22+10	0.7897	0.10	Q	|	|	|	V|
22+15	0.7904	0.11	Q	|	|	|	V|
22+20	0.7911	0.11	Q	|	|	|	V|
22+25	0.7918	0.09	Q	|	|	|	V|

```
  22+30       0.7924      0.09  Q        |         |         |        V|
  22+35       0.7930      0.08  Q        |         |         |        V|
  22+40       0.7935      0.08  Q        |         |         |        V|
  22+45       0.7941      0.08  Q        |         |         |        V|
  22+50       0.7946      0.08  Q        |         |         |        V|
  22+55       0.7952      0.08  Q        |         |         |        V|
  23+ 0       0.7957      0.08  Q        |         |         |        V|
  23+ 5       0.7962      0.08  Q        |         |         |        V|
  23+10       0.7968      0.08  Q        |         |         |        V|
  23+15       0.7973      0.08  Q        |         |         |        V|
  23+20       0.7979      0.08  Q        |         |         |        V|
  23+25       0.7984      0.08  Q        |         |         |        V|
  23+30       0.7989      0.08  Q        |         |         |        V|
  23+35       0.7995      0.08  Q        |         |         |        V|
  23+40       0.8000      0.08  Q        |         |         |        V|
  23+45       0.8005      0.08  Q        |         |         |        V|
  23+50       0.8011      0.08  Q        |         |         |        V|
  23+55       0.8016      0.08  Q        |         |         |        V|
  24+ 0       0.8021      0.08  Q        |         |         |        V|
  24+ 5       0.8026      0.07  Q        |         |         |        V|
  24+10       0.8029      0.04  Q        |         |         |        V|
  24+15       0.8030      0.02  Q        |         |         |        V|
  24+20       0.8031      0.01  Q        |         |         |        V|
  24+25       0.8032      0.01  Q        |         |         |        V|
  24+30       0.8033      0.01  Q        |         |         |        V|
  24+35       0.8033      0.00  Q        |         |         |        V|
  24+40       0.8033      0.00  Q        |         |         |        V|
  24+45       0.8033      0.00  Q        |         |         |        V|
  24+50       0.8033      0.00  Q        |         |         |        V|
  24+55       0.8033      0.00  Q        |         |         |         V
-------------------------------------------------------------------------
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U n i t H y d r o g r a p h A n a l y s i s

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Study date 09/24/24 File: ONSITEPROP242.out

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Riverside County Synthetic Unit Hydrology Method
RCFC & WCD Manual date - April 1978

Program License Serial Number 6584

English (in-lb) Input Units Used
English Rainfall Data (Inches) Input Values Used

English Units used in output format

24-0564 - HERITAGE VALLEY BUSINESS CENTER
ONSITE UNIT HYDROGRAPH ANALYSIS
PROPOSED CONDITION, 2-YEAR X-HOUR
FN: ONSITEPROPX2.OUT- MJS

Drainage Area = 41.20(Ac.) = 0.064 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 41.20(Ac.) = 0.064 Sq. Mi.
Length along longest watercourse = 3142.00(Ft.)
Length along longest watercourse measured to centroid = 673.00(Ft.)
Length along longest watercourse = 0.595 Mi.
Length along longest watercourse measured to centroid = 0.127 Mi.
Difference in elevation = 17.40(Ft.)
Slope along watercourse = 29.2400 Ft./Mi.
Average Manning's 'N' = 0.015
Lag time = 0.071 Hr.
Lag time = 4.27 Min.
25% of lag time = 1.07 Min.
40% of lag time = 1.71 Min.
Unit time = 5.00 Min.
Duration of storm = 24 Hour(s)
User Entered Base Flow = 0.00(CFS)

2 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	1.60	65.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
41.20	4.50	185.40

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 1.600(In)
Area Averaged 100-Year Rainfall = 4.500(In)

Point rain (area averaged) = 1.600(In)
Areal adjustment factor = 99.99 %
Adjusted average point rain = 1.600(In)

Sub-Area Data:
Area(Ac.) Runoff Index Impervious %

```
   41.200           69.00         0.900
 Total Area Entered =     41.20(Ac.)


RI    RI   Infil. Rate Impervious   Adj. Infil. Rate  Area%     F
AMC2 AMC-1     (In/Hr)    (Dec.%)     (In/Hr)      (Dec.)    (In/Hr)
69.0  49.8      0.574     0.900        0.109       1.000      0.109
                                                 Sum (F) =   0.109
Area averaged mean soil loss (F) (In/Hr) =  0.109
Minimum soil loss rate ((In/Hr)) =  0.055
(for 24 hour storm duration)
Soil low loss rate (decimal) =   0.180
------------------------------------------------------------------------

               U n i t  H y d r o g r a p h
                      VALLEY S-Curve
------------------------------------------------------------------------
               Unit Hydrograph Data
------------------------------------------------------------------------
Unit time period   Time % of lag   Distribution   Unit Hydrograph
    (hrs)                          Graph %            (CFS)
------------------------------------------------------------------------
    1   0.083        117.130         24.362             10.116
    2   0.167        234.261         48.793             20.260
    3   0.250        351.391         13.567              5.633
    4   0.333        468.522          6.173              2.563
    5   0.417        585.652          3.446              1.431
    6   0.500        702.782          2.028              0.842
    7   0.583        819.913          1.632              0.678
                              Sum = 100.000   Sum=      41.522
------------------------------------------------------------------------

 The following loss rate calculations reflect use of the minimum calculated loss
 rate subtracted from the Storm Rain to produce the maximum Effective Rain value

  Unit Time   Pattern   Storm Rain     Loss rate(In./Hr)     Effective
       (Hr.)  Percent   (In/Hr)         Max   |   Low        (In/Hr)
    1   0.08     0.07      0.013       (  0.193)       0.002        0.010
    2   0.17     0.07      0.013       (  0.193)       0.002        0.010
    3   0.25     0.07      0.013       (  0.192)       0.002        0.010
    4   0.33     0.10      0.019       (  0.191)       0.003        0.016
    5   0.42     0.10      0.019       (  0.190)       0.003        0.016
    6   0.50     0.10      0.019       (  0.190)       0.003        0.016
    7   0.58     0.10      0.019       (  0.189)       0.003        0.016
    8   0.67     0.10      0.019       (  0.188)       0.003        0.016
    9   0.75     0.10      0.019       (  0.187)       0.003        0.016
   10   0.83     0.13      0.026       (  0.187)       0.005        0.021
   11   0.92     0.13      0.026       (  0.186)       0.005        0.021
   12   1.00     0.13      0.026       (  0.185)       0.005        0.021
   13   1.08     0.10      0.019       (  0.184)       0.003        0.016
   14   1.17     0.10      0.019       (  0.184)       0.003        0.016
   15   1.25     0.10      0.019       (  0.183)       0.003        0.016
   16   1.33     0.10      0.019       (  0.182)       0.003        0.016
   17   1.42     0.10      0.019       (  0.182)       0.003        0.016
   18   1.50     0.10      0.019       (  0.181)       0.003        0.016
   19   1.58     0.10      0.019       (  0.180)       0.003        0.016
   20   1.67     0.10      0.019       (  0.179)       0.003        0.016
   21   1.75     0.10      0.019       (  0.179)       0.003        0.016
   22   1.83     0.13      0.026       (  0.178)       0.005        0.021
   23   1.92     0.13      0.026       (  0.177)       0.005        0.021
   24   2.00     0.13      0.026       (  0.176)       0.005        0.021
   25   2.08     0.13      0.026       (  0.176)       0.005        0.021
   26   2.17     0.13      0.026       (  0.175)       0.005        0.021
   27   2.25     0.13      0.026       (  0.174)       0.005        0.021
   28   2.33     0.13      0.026       (  0.174)       0.005        0.021
   29   2.42     0.13      0.026       (  0.173)       0.005        0.021
   30   2.50     0.13      0.026       (  0.172)       0.005        0.021
   31   2.58     0.17      0.032       (  0.172)       0.006        0.026
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32	2.67	0.17	0.032	(0.171)	0.006	0.026
33	2.75	0.17	0.032	(0.170)	0.006	0.026
34	2.83	0.17	0.032	(0.169)	0.006	0.026
35	2.92	0.17	0.032	(0.169)	0.006	0.026
36	3.00	0.17	0.032	(0.168)	0.006	0.026
37	3.08	0.17	0.032	(0.167)	0.006	0.026
38	3.17	0.17	0.032	(0.167)	0.006	0.026
39	3.25	0.17	0.032	(0.166)	0.006	0.026
40	3.33	0.17	0.032	(0.165)	0.006	0.026
41	3.42	0.17	0.032	(0.165)	0.006	0.026
42	3.50	0.17	0.032	(0.164)	0.006	0.026
43	3.58	0.17	0.032	(0.163)	0.006	0.026
44	3.67	0.17	0.032	(0.162)	0.006	0.026
45	3.75	0.17	0.032	(0.162)	0.006	0.026
46	3.83	0.20	0.038	(0.161)	0.007	0.031
47	3.92	0.20	0.038	(0.160)	0.007	0.031
48	4.00	0.20	0.038	(0.160)	0.007	0.031
49	4.08	0.20	0.038	(0.159)	0.007	0.031
50	4.17	0.20	0.038	(0.158)	0.007	0.031
51	4.25	0.20	0.038	(0.158)	0.007	0.031
52	4.33	0.23	0.045	(0.157)	0.008	0.037
53	4.42	0.23	0.045	(0.156)	0.008	0.037
54	4.50	0.23	0.045	(0.156)	0.008	0.037
55	4.58	0.23	0.045	(0.155)	0.008	0.037
56	4.67	0.23	0.045	(0.154)	0.008	0.037
57	4.75	0.23	0.045	(0.154)	0.008	0.037
58	4.83	0.27	0.051	(0.153)	0.009	0.042
59	4.92	0.27	0.051	(0.152)	0.009	0.042
60	5.00	0.27	0.051	(0.152)	0.009	0.042
61	5.08	0.20	0.038	(0.151)	0.007	0.031
62	5.17	0.20	0.038	(0.150)	0.007	0.031
63	5.25	0.20	0.038	(0.150)	0.007	0.031
64	5.33	0.23	0.045	(0.149)	0.008	0.037
65	5.42	0.23	0.045	(0.148)	0.008	0.037
66	5.50	0.23	0.045	(0.148)	0.008	0.037
67	5.58	0.27	0.051	(0.147)	0.009	0.042
68	5.67	0.27	0.051	(0.147)	0.009	0.042
69	5.75	0.27	0.051	(0.146)	0.009	0.042
70	5.83	0.27	0.051	(0.145)	0.009	0.042
71	5.92	0.27	0.051	(0.145)	0.009	0.042
72	6.00	0.27	0.051	(0.144)	0.009	0.042
73	6.08	0.30	0.058	(0.143)	0.010	0.047
74	6.17	0.30	0.058	(0.143)	0.010	0.047
75	6.25	0.30	0.058	(0.142)	0.010	0.047
76	6.33	0.30	0.058	(0.141)	0.010	0.047
77	6.42	0.30	0.058	(0.141)	0.010	0.047
78	6.50	0.30	0.058	(0.140)	0.010	0.047
79	6.58	0.33	0.064	(0.140)	0.012	0.052
80	6.67	0.33	0.064	(0.139)	0.012	0.052
81	6.75	0.33	0.064	(0.138)	0.012	0.052
82	6.83	0.33	0.064	(0.138)	0.012	0.052
83	6.92	0.33	0.064	(0.137)	0.012	0.052
84	7.00	0.33	0.064	(0.136)	0.012	0.052
85	7.08	0.33	0.064	(0.136)	0.012	0.052
86	7.17	0.33	0.064	(0.135)	0.012	0.052
87	7.25	0.33	0.064	(0.135)	0.012	0.052
88	7.33	0.37	0.070	(0.134)	0.013	0.058
89	7.42	0.37	0.070	(0.133)	0.013	0.058
90	7.50	0.37	0.070	(0.133)	0.013	0.058
91	7.58	0.40	0.077	(0.132)	0.014	0.063
92	7.67	0.40	0.077	(0.131)	0.014	0.063
93	7.75	0.40	0.077	(0.131)	0.014	0.063
94	7.83	0.43	0.083	(0.130)	0.015	0.068
95	7.92	0.43	0.083	(0.130)	0.015	0.068
96	8.00	0.43	0.083	(0.129)	0.015	0.068
97	8.08	0.50	0.096	(0.128)	0.017	0.079
98	8.17	0.50	0.096	(0.128)	0.017	0.079
99	8.25	0.50	0.096	(0.127)	0.017	0.079
100	8.33	0.50	0.096	(0.127)	0.017	0.079

101	8.42	0.50	0.096	(0.126)	0.017	0.079
102	8.50	0.50	0.096	(0.125)	0.017	0.079
103	8.58	0.53	0.102	(0.125)	0.018	0.084
104	8.67	0.53	0.102	(0.124)	0.018	0.084
105	8.75	0.53	0.102	(0.124)	0.018	0.084
106	8.83	0.57	0.109	(0.123)	0.020	0.089
107	8.92	0.57	0.109	(0.123)	0.020	0.089
108	9.00	0.57	0.109	(0.122)	0.020	0.089
109	9.08	0.63	0.122	(0.121)	0.022	0.100
110	9.17	0.63	0.122	(0.121)	0.022	0.100
111	9.25	0.63	0.122	(0.120)	0.022	0.100
112	9.33	0.67	0.128	(0.120)	0.023	0.105
113	9.42	0.67	0.128	(0.119)	0.023	0.105
114	9.50	0.67	0.128	(0.119)	0.023	0.105
115	9.58	0.70	0.134	(0.118)	0.024	0.110
116	9.67	0.70	0.134	(0.117)	0.024	0.110
117	9.75	0.70	0.134	(0.117)	0.024	0.110
118	9.83	0.73	0.141	(0.116)	0.025	0.115
119	9.92	0.73	0.141	(0.116)	0.025	0.115
120	10.00	0.73	0.141	(0.115)	0.025	0.115
121	10.08	0.50	0.096	(0.115)	0.017	0.079
122	10.17	0.50	0.096	(0.114)	0.017	0.079
123	10.25	0.50	0.096	(0.113)	0.017	0.079
124	10.33	0.50	0.096	(0.113)	0.017	0.079
125	10.42	0.50	0.096	(0.112)	0.017	0.079
126	10.50	0.50	0.096	(0.112)	0.017	0.079
127	10.58	0.67	0.128	(0.111)	0.023	0.105
128	10.67	0.67	0.128	(0.111)	0.023	0.105
129	10.75	0.67	0.128	(0.110)	0.023	0.105
130	10.83	0.67	0.128	(0.110)	0.023	0.105
131	10.92	0.67	0.128	(0.109)	0.023	0.105
132	11.00	0.67	0.128	(0.109)	0.023	0.105
133	11.08	0.63	0.122	(0.108)	0.022	0.100
134	11.17	0.63	0.122	(0.108)	0.022	0.100
135	11.25	0.63	0.122	(0.107)	0.022	0.100
136	11.33	0.63	0.122	(0.106)	0.022	0.100
137	11.42	0.63	0.122	(0.106)	0.022	0.100
138	11.50	0.63	0.122	(0.105)	0.022	0.100
139	11.58	0.57	0.109	(0.105)	0.020	0.089
140	11.67	0.57	0.109	(0.104)	0.020	0.089
141	11.75	0.57	0.109	(0.104)	0.020	0.089
142	11.83	0.60	0.115	(0.103)	0.021	0.094
143	11.92	0.60	0.115	(0.103)	0.021	0.094
144	12.00	0.60	0.115	(0.102)	0.021	0.094
145	12.08	0.83	0.160	(0.102)	0.029	0.131
146	12.17	0.83	0.160	(0.101)	0.029	0.131
147	12.25	0.83	0.160	(0.101)	0.029	0.131
148	12.33	0.87	0.166	(0.100)	0.030	0.136
149	12.42	0.87	0.166	(0.100)	0.030	0.136
150	12.50	0.87	0.166	(0.099)	0.030	0.136
151	12.58	0.93	0.179	(0.099)	0.032	0.147
152	12.67	0.93	0.179	(0.098)	0.032	0.147
153	12.75	0.93	0.179	(0.098)	0.032	0.147
154	12.83	0.97	0.186	(0.097)	0.033	0.152
155	12.92	0.97	0.186	(0.097)	0.033	0.152
156	13.00	0.97	0.186	(0.096)	0.033	0.152
157	13.08	1.13	0.218	(0.096)	0.039	0.178
158	13.17	1.13	0.218	(0.095)	0.039	0.178
159	13.25	1.13	0.218	(0.095)	0.039	0.178
160	13.33	1.13	0.218	(0.094)	0.039	0.178
161	13.42	1.13	0.218	(0.094)	0.039	0.178
162	13.50	1.13	0.218	(0.093)	0.039	0.178
163	13.58	0.77	0.147	(0.093)	0.026	0.121
164	13.67	0.77	0.147	(0.092)	0.026	0.121
165	13.75	0.77	0.147	(0.092)	0.026	0.121
166	13.83	0.77	0.147	(0.092)	0.026	0.121
167	13.92	0.77	0.147	(0.091)	0.026	0.121
168	14.00	0.77	0.147	(0.091)	0.026	0.121
169	14.08	0.90	0.173	(0.090)	0.031	0.142

170	14.17	0.90	0.173	(0.090)	0.031	0.142
171	14.25	0.90	0.173	(0.089)	0.031	0.142
172	14.33	0.87	0.166	(0.089)	0.030	0.136
173	14.42	0.87	0.166	(0.088)	0.030	0.136
174	14.50	0.87	0.166	(0.088)	0.030	0.136
175	14.58	0.87	0.166	(0.087)	0.030	0.136
176	14.67	0.87	0.166	(0.087)	0.030	0.136
177	14.75	0.87	0.166	(0.086)	0.030	0.136
178	14.83	0.83	0.160	(0.086)	0.029	0.131
179	14.92	0.83	0.160	(0.086)	0.029	0.131
180	15.00	0.83	0.160	(0.085)	0.029	0.131
181	15.08	0.80	0.154	(0.085)	0.028	0.126
182	15.17	0.80	0.154	(0.084)	0.028	0.126
183	15.25	0.80	0.154	(0.084)	0.028	0.126
184	15.33	0.77	0.147	(0.083)	0.026	0.121
185	15.42	0.77	0.147	(0.083)	0.026	0.121
186	15.50	0.77	0.147	(0.083)	0.026	0.121
187	15.58	0.63	0.122	(0.082)	0.022	0.100
188	15.67	0.63	0.122	(0.082)	0.022	0.100
189	15.75	0.63	0.122	(0.081)	0.022	0.100
190	15.83	0.63	0.122	(0.081)	0.022	0.100
191	15.92	0.63	0.122	(0.080)	0.022	0.100
192	16.00	0.63	0.122	(0.080)	0.022	0.100
193	16.08	0.13	0.026	(0.080)	0.005	0.021
194	16.17	0.13	0.026	(0.079)	0.005	0.021
195	16.25	0.13	0.026	(0.079)	0.005	0.021
196	16.33	0.13	0.026	(0.078)	0.005	0.021
197	16.42	0.13	0.026	(0.078)	0.005	0.021
198	16.50	0.13	0.026	(0.078)	0.005	0.021
199	16.58	0.10	0.019	(0.077)	0.003	0.016
200	16.67	0.10	0.019	(0.077)	0.003	0.016
201	16.75	0.10	0.019	(0.076)	0.003	0.016
202	16.83	0.10	0.019	(0.076)	0.003	0.016
203	16.92	0.10	0.019	(0.076)	0.003	0.016
204	17.00	0.10	0.019	(0.075)	0.003	0.016
205	17.08	0.17	0.032	(0.075)	0.006	0.026
206	17.17	0.17	0.032	(0.075)	0.006	0.026
207	17.25	0.17	0.032	(0.074)	0.006	0.026
208	17.33	0.17	0.032	(0.074)	0.006	0.026
209	17.42	0.17	0.032	(0.073)	0.006	0.026
210	17.50	0.17	0.032	(0.073)	0.006	0.026
211	17.58	0.17	0.032	(0.073)	0.006	0.026
212	17.67	0.17	0.032	(0.072)	0.006	0.026
213	17.75	0.17	0.032	(0.072)	0.006	0.026
214	17.83	0.13	0.026	(0.072)	0.005	0.021
215	17.92	0.13	0.026	(0.071)	0.005	0.021
216	18.00	0.13	0.026	(0.071)	0.005	0.021
217	18.08	0.13	0.026	(0.071)	0.005	0.021
218	18.17	0.13	0.026	(0.070)	0.005	0.021
219	18.25	0.13	0.026	(0.070)	0.005	0.021
220	18.33	0.13	0.026	(0.070)	0.005	0.021
221	18.42	0.13	0.026	(0.069)	0.005	0.021
222	18.50	0.13	0.026	(0.069)	0.005	0.021
223	18.58	0.10	0.019	(0.069)	0.003	0.016
224	18.67	0.10	0.019	(0.068)	0.003	0.016
225	18.75	0.10	0.019	(0.068)	0.003	0.016
226	18.83	0.07	0.013	(0.068)	0.002	0.010
227	18.92	0.07	0.013	(0.067)	0.002	0.010
228	19.00	0.07	0.013	(0.067)	0.002	0.010
229	19.08	0.10	0.019	(0.067)	0.003	0.016
230	19.17	0.10	0.019	(0.066)	0.003	0.016
231	19.25	0.10	0.019	(0.066)	0.003	0.016
232	19.33	0.13	0.026	(0.066)	0.005	0.021
233	19.42	0.13	0.026	(0.065)	0.005	0.021
234	19.50	0.13	0.026	(0.065)	0.005	0.021
235	19.58	0.10	0.019	(0.065)	0.003	0.016
236	19.67	0.10	0.019	(0.064)	0.003	0.016
237	19.75	0.10	0.019	(0.064)	0.003	0.016
238	19.83	0.07	0.013	(0.064)	0.002	0.010

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239  19.92     0.07      0.013       (  0.064)       0.002        0.010
240  20.00     0.07      0.013       (  0.063)       0.002        0.010
241  20.08     0.10      0.019       (  0.063)       0.003        0.016
242  20.17     0.10      0.019       (  0.063)       0.003        0.016
243  20.25     0.10      0.019       (  0.062)       0.003        0.016
244  20.33     0.10      0.019       (  0.062)       0.003        0.016
245  20.42     0.10      0.019       (  0.062)       0.003        0.016
246  20.50     0.10      0.019       (  0.062)       0.003        0.016
247  20.58     0.10      0.019       (  0.061)       0.003        0.016
248  20.67     0.10      0.019       (  0.061)       0.003        0.016
249  20.75     0.10      0.019       (  0.061)       0.003        0.016
250  20.83     0.07      0.013       (  0.061)       0.002        0.010
251  20.92     0.07      0.013       (  0.060)       0.002        0.010
252  21.00     0.07      0.013       (  0.060)       0.002        0.010
253  21.08     0.10      0.019       (  0.060)       0.003        0.016
254  21.17     0.10      0.019       (  0.060)       0.003        0.016
255  21.25     0.10      0.019       (  0.059)       0.003        0.016
256  21.33     0.07      0.013       (  0.059)       0.002        0.010
257  21.42     0.07      0.013       (  0.059)       0.002        0.010
258  21.50     0.07      0.013       (  0.059)       0.002        0.010
259  21.58     0.10      0.019       (  0.059)       0.003        0.016
260  21.67     0.10      0.019       (  0.058)       0.003        0.016
261  21.75     0.10      0.019       (  0.058)       0.003        0.016
262  21.83     0.07      0.013       (  0.058)       0.002        0.010
263  21.92     0.07      0.013       (  0.058)       0.002        0.010
264  22.00     0.07      0.013       (  0.058)       0.002        0.010
265  22.08     0.10      0.019       (  0.057)       0.003        0.016
266  22.17     0.10      0.019       (  0.057)       0.003        0.016
267  22.25     0.10      0.019       (  0.057)       0.003        0.016
268  22.33     0.07      0.013       (  0.057)       0.002        0.010
269  22.42     0.07      0.013       (  0.057)       0.002        0.010
270  22.50     0.07      0.013       (  0.057)       0.002        0.010
271  22.58     0.07      0.013       (  0.056)       0.002        0.010
272  22.67     0.07      0.013       (  0.056)       0.002        0.010
273  22.75     0.07      0.013       (  0.056)       0.002        0.010
274  22.83     0.07      0.013       (  0.056)       0.002        0.010
275  22.92     0.07      0.013       (  0.056)       0.002        0.010
276  23.00     0.07      0.013       (  0.056)       0.002        0.010
277  23.08     0.07      0.013       (  0.055)       0.002        0.010
278  23.17     0.07      0.013       (  0.055)       0.002        0.010
279  23.25     0.07      0.013       (  0.055)       0.002        0.010
280  23.33     0.07      0.013       (  0.055)       0.002        0.010
281  23.42     0.07      0.013       (  0.055)       0.002        0.010
282  23.50     0.07      0.013       (  0.055)       0.002        0.010
283  23.58     0.07      0.013       (  0.055)       0.002        0.010
284  23.67     0.07      0.013       (  0.055)       0.002        0.010
285  23.75     0.07      0.013       (  0.055)       0.002        0.010
286  23.83     0.07      0.013       (  0.055)       0.002        0.010
287  23.92     0.07      0.013       (  0.055)       0.002        0.010
288  24.00     0.07      0.013       (  0.055)       0.002        0.010
               (Loss Rate Not Used)
    Sum =     100.0                                  Sum =    15.7
       Flood volume = Effective rainfall      1.31(In)
        times area      41.2(Ac.)/[(In)/(Ft.)] =       4.5(Ac.Ft)
       Total soil loss =      0.29(In)
       Total soil loss =     0.989(Ac.Ft)
       Total rainfall =      1.60(In)
       Flood volume =      196201.7 Cubic Feet
       Total soil loss =       43068.7 Cubic Feet
       ---------------------------------------------------------------------
        Peak flow rate of this hydrograph =      7.394(CFS)
       ---------------------------------------------------------------------
       +++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
                           24 - H O U R    S T O R M
                     R u n o f f      H y d r o g r a p h
       ---------------------------------------------------------------------
                  Hydrograph in   5   Minute intervals ((CFS))

       ---------------------------------------------------------------------
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Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0007	0.11	Q				
0+10	0.0029	0.32	VQ				
0+15	0.0055	0.38	VQ				
0+20	0.0087	0.46	VQ				
0+25	0.0127	0.58	V Q				
0+30	0.0169	0.62	V Q				
0+35	0.0213	0.64	V Q				
0+40	0.0258	0.65	V Q				
0+45	0.0303	0.65	V Q				
0+50	0.0351	0.71	V Q				
0+55	0.0407	0.81	V Q				
1+ 0	0.0465	0.84	V Q				
1+ 5	0.0521	0.80	V Q				
1+10	0.0569	0.70	V Q				
1+15	0.0616	0.68	V Q				
1+20	0.0662	0.67	V Q				
1+25	0.0708	0.66	V Q				
1+30	0.0753	0.66	V Q				
1+35	0.0798	0.65	V Q				
1+40	0.0843	0.65	V Q				
1+45	0.0888	0.65	V Q				
1+50	0.0937	0.71	V Q				
1+55	0.0993	0.81	V Q				
2+ 0	0.1051	0.84	V Q				
2+ 5	0.1110	0.86	V Q				
2+10	0.1169	0.86	|V Q				
2+15	0.1229	0.87	|V Q				
2+20	0.1289	0.87	|V Q				
2+25	0.1349	0.87	|V Q				
2+30	0.1409	0.87	|V Q				
2+35	0.1473	0.93	|V Q				
2+40	0.1544	1.03	|V Q				
2+45	0.1617	1.06	|V Q				
2+50	0.1691	1.07	|V Q				
2+55	0.1766	1.08	|V Q				
3+ 0	0.1841	1.09	|V Q				
3+ 5	0.1916	1.09	|V Q				
3+10	0.1991	1.09	|V Q				
3+15	0.2066	1.09	|V Q				
3+20	0.2141	1.09	|V Q				
3+25	0.2216	1.09	|V Q				
3+30	0.2291	1.09	| V Q				
3+35	0.2366	1.09	| V Q				
3+40	0.2441	1.09	| V Q				
3+45	0.2516	1.09	| V Q				
3+50	0.2595	1.14	| V Q				
3+55	0.2681	1.25	| V Q				
4+ 0	0.2769	1.28	| V Q				
4+ 5	0.2858	1.29	| V Q				
4+10	0.2948	1.30	| V Q				
4+15	0.3037	1.30	| V Q				
4+20	0.3131	1.36	| V Q				
4+25	0.3232	1.47	| V Q				
4+30	0.3335	1.50	| V Q				
4+35	0.3439	1.51	| V Q				
4+40	0.3544	1.52	| V Q				
4+45	0.3649	1.52	| V Q				
4+50	0.3758	1.58	| V Q				
4+55	0.3874	1.69	| V Q				
5+ 0	0.3992	1.72	| V Q				
5+ 5	0.4103	1.62	| V Q				
5+10	0.4201	1.42	| V Q				
5+15	0.4295	1.36	| V Q				
5+20	0.4391	1.39	| V Q				
5+25	0.4493	1.48	| V Q				
5+30	0.4597	1.50	| V Q				
5+35	0.4704	1.56	| V Q				

5+40	0.4820	1.68	V Q			
5+45	0.4938	1.71	V Q			
5+50	0.5057	1.73	V Q			
5+55	0.5176	1.74	V Q			
6+ 0	0.5296	1.74	V Q			
6+ 5	0.5420	1.80	V Q			
6+10	0.5551	1.90	V Q			
6+15	0.5684	1.93	V Q			
6+20	0.5818	1.95	V Q			
6+25	0.5953	1.95	V Q			
6+30	0.6088	1.96	V Q			
6+35	0.6226	2.02	V Q			
6+40	0.6373	2.12	V Q			
6+45	0.6521	2.15	V Q			
6+50	0.6670	2.16	V Q			
6+55	0.6819	2.17	V Q			
7+ 0	0.6969	2.18	V Q			
7+ 5	0.7119	2.18	V Q			
7+10	0.7269	2.18	V Q			
7+15	0.7420	2.18	V Q			
7+20	0.7573	2.23	V Q			
7+25	0.7735	2.34	V Q			
7+30	0.7898	2.37	V Q			
7+35	0.8065	2.44	V Q			
7+40	0.8241	2.55	V Q			
7+45	0.8419	2.58	V Q			
7+50	0.8602	2.65	V Q			
7+55	0.8792	2.77	V Q			
8+ 0	0.8985	2.80	V Q			
8+ 5	0.9187	2.92	V Q			
8+10	0.9403	3.15	V Q			
8+15	0.9624	3.21	V Q			
8+20	0.9847	3.24	V Q			
8+25	1.0071	3.25	V Q			
8+30	1.0296	3.26	V Q			
8+35	1.0525	3.32	V Q			
8+40	1.0761	3.43	V Q			
8+45	1.0999	3.46	V Q			
8+50	1.1242	3.53	V Q			
8+55	1.1493	3.64	V Q			
9+ 0	1.1746	3.67	V Q			
9+ 5	1.2007	3.80	V Q			
9+10	1.2284	4.02	V Q			
9+15	1.2565	4.08	V Q			
9+20	1.2852	4.16	V Q			
9+25	1.3147	4.29	V Q			
9+30	1.3445	4.32	V Q			
9+35	1.3748	4.40	V Q			
9+40	1.4058	4.51	V Q			
9+45	1.4371	4.55	V Q			
9+50	1.4689	4.62	V Q			
9+55	1.5015	4.73	V Q			
10+ 0	1.5343	4.76	V Q			
10+ 5	1.5647	4.41	V Q			
10+10	1.5900	3.67	Q			
10+15	1.6139	3.47	QV			
10+20	1.6371	3.38	QV			
10+25	1.6600	3.33	QV			
10+30	1.6827	3.29	QV			
10+35	1.7071	3.54	QV			
10+40	1.7351	4.07	VQ			
10+45	1.7641	4.22	VQ			
10+50	1.7936	4.28	V Q			
10+55	1.8234	4.32	VQ			
11+ 0	1.8533	4.34	VQ			
11+ 5	1.8829	4.31	VQ			
11+10	1.9119	4.20	Q			
11+15	1.9406	4.17	QV			
11+20	1.9692	4.16	QV			

11+25	1.9978	4.15	|	| QV |	|	|
11+30	2.0264	4.15	|	| QV |	|	|
11+35	2.0541	4.04	|	| Q V |	|	|
11+40	2.0805	3.82	|	| Q V |	|	|
11+45	2.1064	3.76	|	| Q V |	|	|
11+50	2.1325	3.79	|	| Q V |	|	|
11+55	2.1592	3.88	|	| Q V|	|	|
12+ 0	2.1861	3.90	|	| Q V|	|	|
12+ 5	2.2156	4.28	|	| Q V|	|	|
12+10	2.2502	5.03	|	| VQ	|	|
12+15	2.2864	5.24	|	| Q	|	|
12+20	2.3235	5.39	|	| VQ	|	|
12+25	2.3618	5.55	|	| V Q	|	|
12+30	2.4004	5.61	|	| |VQ	|	|
12+35	2.4401	5.76	|	| |V Q	|	|
12+40	2.4813	5.98	|	| | VQ	|	|
12+45	2.5229	6.04	|	| | V Q	|	|
12+50	2.5651	6.13	|	| | V Q	|	|
12+55	2.6081	6.25	|	| | VQ	|	|
13+ 0	2.6514	6.29	|	| | V Q	|	|
13+ 5	2.6967	6.57	|	| | V Q	|	|
13+10	2.7456	7.11	|	| | V Q |	|	|
13+15	2.7957	7.26	|	| | V Q|	|	|
13+20	2.8462	7.33	|	| | V Q|	|	|
13+25	2.8969	7.37	|	| | V Q|	|	|
13+30	2.9479	7.39	|	| | V Q|	|	|
13+35	2.9949	6.83	|	| | VQ |	|	|
13+40	3.0339	5.66	|	| | Q V |	|	|
13+45	3.0706	5.33	|	| |Q V |	|	|
13+50	3.1063	5.18	|	| Q V |	|	|
13+55	3.1414	5.10	|	| Q V |	|	|
14+ 0	3.1762	5.05	|	| Q V |	|	|
14+ 5	3.2122	5.23	|	| Q V |	|	|
14+10	3.2511	5.65	|	| | Q V |	|	|
14+15	3.2909	5.77	|	| | Q V|	|	|
14+20	3.3306	5.77	|	| | Q V|	|	|
14+25	3.3699	5.69	|	| | Q V|	|	|
14+30	3.4090	5.68	|	| | Q V	|	|
14+35	3.4481	5.68	|	| | Q V	|	|
14+40	3.4872	5.68	|	| | Q V	|	|
14+45	3.5263	5.67	|	| | Q |V	|	|
14+50	3.5650	5.61	|	| | Q |V	|	|
14+55	3.6029	5.51	|	| | Q |V	|	|
15+ 0	3.6406	5.48	|	| |Q | V	|	|
15+ 5	3.6779	5.41	|	| |Q | V	|	|
15+10	3.7144	5.30	|	| |Q | V	|	|
15+15	3.7507	5.26	|	| |Q | V	|	|
15+20	3.7864	5.19	|	| Q | V	|	|
15+25	3.8214	5.08	|	| Q | V	|	|
15+30	3.8562	5.05	|	| Q | V	|	|
15+35	3.8893	4.82	|	| Q| | V	|	|
15+40	3.9195	4.38	|	| Q | | V	|	|
15+45	3.9489	4.26	|	| Q | | V	|	|
15+50	3.9778	4.20	|	| Q | | V	|	|
15+55	4.0066	4.17	|	| Q | | V	|	|
16+ 0	4.0352	4.16	|	| Q | | V	|	|
16+ 5	4.0583	3.35	|	| Q | | V	|	|
16+10	4.0703	1.75	|	Q | | V	|	|
16+15	4.0793	1.31	|	Q | | V	|	|
16+20	4.0869	1.10	|	Q | | V	|	|
16+25	4.0937	0.99	|	Q | | V	|	|
16+30	4.1001	0.93	|	Q | | V	|	|
16+35	4.1057	0.82	|	Q | | V	|	|
16+40	4.1107	0.71	|	Q | | V	|	|
16+45	4.1154	0.68	|	Q | | V	|	|
16+50	4.1200	0.67	|	Q | | V	|	|
16+55	4.1245	0.66	|	Q | | V	|	|
17+ 0	4.1291	0.66	|	Q | | V	|	|
17+ 5	4.1343	0.76	|	Q | | V	|	|

17+10	4.1410	0.97	Q			V
17+15	4.1481	1.03	Q			V
17+20	4.1554	1.06	Q			V
17+25	4.1628	1.07	Q			V
17+30	4.1702	1.08	Q			V
17+35	4.1778	1.09	Q			V
17+40	4.1853	1.09	Q			V
17+45	4.1928	1.09	Q			V
17+50	4.1999	1.04	Q			V
17+55	4.2063	0.93	Q			V
18+ 0	4.2125	0.90	Q			V
18+ 5	4.2186	0.89	Q			V
18+10	4.2247	0.88	Q			V
18+15	4.2307	0.88	Q			V
18+20	4.2367	0.87	Q			V
18+25	4.2427	0.87	Q			V
18+30	4.2487	0.87	Q			V
18+35	4.2544	0.82	Q			V
18+40	4.2593	0.71	Q			V
18+45	4.2640	0.68	Q			V
18+50	4.2682	0.62	Q			V
18+55	4.2717	0.50	Q			V
19+ 0	4.2749	0.47	Q			V
19+ 5	4.2784	0.50	Q			V
19+10	4.2826	0.60	Q			V
19+15	4.2869	0.63	Q			V
19+20	4.2917	0.69	Q			V
19+25	4.2972	0.81	Q			V
19+30	4.3030	0.84	Q			V
19+35	4.3085	0.80	Q			V
19+40	4.3134	0.70	Q			V
19+45	4.3180	0.68	Q			V
19+50	4.3223	0.62	Q			V
19+55	4.3258	0.50	Q			V
20+ 0	4.3290	0.47	Q			V
20+ 5	4.3325	0.50	Q			V
20+10	4.3366	0.60	Q			V
20+15	4.3409	0.63	Q			V
20+20	4.3453	0.64	Q			V
20+25	4.3498	0.65	Q			V
20+30	4.3543	0.65	Q			V
20+35	4.3588	0.65	Q			V
20+40	4.3633	0.65	Q			V
20+45	4.3678	0.65	Q			V
20+50	4.3719	0.60	Q			V
20+55	4.3753	0.49	Q			V
21+ 0	4.3785	0.46	Q			V
21+ 5	4.3820	0.50	Q			V
21+10	4.3862	0.60	Q			V
21+15	4.3905	0.63	Q			V
21+20	4.3945	0.59	Q			V
21+25	4.3979	0.49	Q			V
21+30	4.4010	0.46	Q			V
21+35	4.4045	0.50	Q			V
21+40	4.4087	0.60	Q			V
21+45	4.4130	0.63	Q			V
21+50	4.4170	0.59	Q			V
21+55	4.4204	0.49	Q			V
22+ 0	4.4236	0.46	Q			V
22+ 5	4.4270	0.50	Q			V
22+10	4.4312	0.60	Q			V
22+15	4.4355	0.63	Q			V
22+20	4.4396	0.59	Q			V
22+25	4.4429	0.49	Q			V
22+30	4.4461	0.46	Q			V
22+35	4.4492	0.45	Q			V
22+40	4.4523	0.44	Q			V
22+45	4.4553	0.44	Q			V
22+50	4.4583	0.44	Q			V

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   22+55       4.4613      0.44  |Q        |         |         |        V|
   23+ 0       4.4643      0.44  |Q        |         |         |        V|
   23+ 5       4.4673      0.44  |Q        |         |         |        V|
   23+10       4.4703      0.44  |Q        |         |         |        V|
   23+15       4.4733      0.44  |Q        |         |         |        V|
   23+20       4.4763      0.44  |Q        |         |         |        V|
   23+25       4.4793      0.44  |Q        |         |         |        V|
   23+30       4.4823      0.44  |Q        |         |         |        V|
   23+35       4.4853      0.44  |Q        |         |         |        V|
   23+40       4.4883      0.44  |Q        |         |         |        V|
   23+45       4.4913      0.44  |Q        |         |         |        V|
   23+50       4.4943      0.44  |Q        |         |         |        V|
   23+55       4.4973      0.44  |Q        |         |         |        V|
   24+ 0       4.5003      0.44  |Q        |         |         |        V|
   24+ 5       4.5026      0.33  |Q        |         |         |        V|
   24+10       4.5034      0.12  Q         |         |         |        V|
   24+15       4.5038      0.06  Q         |         |         |        V|
   24+20       4.5040      0.03  Q         |         |         |        V|
   24+25       4.5041      0.02  Q         |         |         |        V|
   24+30       4.5042      0.01  Q         |         |         |         V
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ALBERT A. WEBB ASSOCIATES

Basin Stage-Storage-Outflow Table
24-0564 Core5 - Heritage Valley Business Center
Underground Chambers

Chamber Information:	ADS MC-4500		**Pump Flowrate**		**100-year Outlet**	
Vbmp:	77,600	CF	Ex. 2-YR 24-HR	1.3	5-ft Diameter Pipe	
	1.781	AC-FT	Q (CFS)	1.0		
Bottom Elevation:	1417.89	FT				
Bottom Length:	455	FT				
Bottom Width:	83	FT				
Bottom Area:	37,784	SF				
Bottom Slope:	0	%				
					Invert H (FT)	1422.64

#	Elevation (FT)	Depth (FT)	Storage (AC-FT)	Q (CFS)	h** (FT)	Q** (CFS)	Qtotal (CFS)	Comments
1.00	1,417.89	0.00	0.000	0.000	0.00	0.00	0.000	Bottom of gravel
2.00	1,417.97	0.08	0.029	0.500	0.00	0.00	0.500	
3.00	1,418.39	0.50	0.173	1.000	0.00	0.00	1.000	
4.00	1,418.64	0.75	0.260	1.000	0.00	0.00	1.000	Top of gravel, Bottom of chambers
5.00	1,418.89	1.00	0.451	1.000	0.00	0.00	1.000	
6.00	1,419.89	2.00	1.201	1.000	0.00	0.00	1.000	
7.00	1,420.72	2.83	1.801	1.000	0.00	0.00	1.000	Water quality volume
8.00	1,420.89	3.00	1.917	1.000	0.00	0.00	1.000	
9.00	1,421.64	3.75	2.420	1.000	0.00	0.00	1.000	
10.00	1,422.72	4.83	3.065	1.000	0.08	0.50	1.500	
11.00	1,423.06	5.17	3.233	1.000	0.42	1.00	2.000	
12.00	1,423.47	5.58	3.402	1.000	0.83	5.00	6.000	
13.00	1,424.06	6.17	3.606	1.000	1.42	15.00	16.000	
14.00	1,424.31	6.42	3.693	1.000	1.67	20.00	21.000	
15.00	1,424.64	6.75	3.809	1.000	2.00	29.00	30.000	Top of total underground system
16.00	1,425.14	7.25	3.810	1.000	2.50	40.00	41.000	
17.00	1,425.50	7.61	3.811	1.000	2.86	60.00	61.000	
18.00	1,425.64	7.75	3.812	1.000	3.00	65.00	66.000	
19.00	1,425.99	8.10	3.813	1.000	3.35	80.00	81.000	
20.00	1,426.40	8.51	3.814	1.000	3.76	100.00	101.000	

** The head is a result from the outlet pipe hydraulics pertaining to the assumed flows

FLOOD HYDROGRAPH ROUTING PROGRAM
Copyright (c) CIVILCADD/CIVILDESIGN, 1989 - 2005
Study date: 09/24/24

24-0564 - HERITAGE VALLEY BUSINESS CENTER
BASIN ROUTING CALCULATIONS
2-YEAR, 24-HOUR STORM EVENT
FN: ROUTE242.OUT MJS

Program License Serial Number 4010

******************** HYDROGRAPH INFORMATION **********************

From study/file name: ONSITEPROP242.rte
**************************HYDROGRAPH DATA**************************
Number of intervals = 294
Time interval = 5.0 (Min.)
Maximum/Peak flow rate = 7.394 (CFS)
Total volume = 4.504 (Ac.Ft)
Status of hydrographs being held in storage
Stream 1 Stream 2 Stream 3 Stream 4 Stream 5
Peak (CFS) 0.000 0.000 0.000 0.000 0.000
Vol (Ac.Ft) 0.000 0.000 0.000 0.000 0.000
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Process from Point/Station 100.000 to Point/Station 101.000
**** RETARDING BASIN ROUTING ****
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User entry of depth-outflow-storage data

Total number of inflow hydrograph intervals = 294
Hydrograph time unit = 5.000 (Min.)
Initial depth in storage basin = 0.00(Ft.)

Initial basin depth = 0.00 (Ft.)
Initial basin storage = 0.00 (Ac.Ft)
Initial basin outflow = 0.00 (CFS)

Depth vs. Storage and Depth vs. Discharge data:

Basin Depth (Ft.)	Storage (Ac.Ft)	Outflow (CFS)	(S-O*dt/2) (Ac.Ft)	(S+O*dt/2) (Ac.Ft)
0.000	0.000	0.000	0.000	0.000
0.080	0.029	0.500	0.027	0.031
0.500	0.173	1.000	0.170	0.176
0.750	0.260	1.000	0.257	0.263
1.000	0.451	1.000	0.448	0.454
2.000	1.201	1.000	1.198	1.204
2.830	1.801	1.000	1.798	1.804
3.000	1.917	1.000	1.914	1.920
3.750	2.420	1.000	2.417	2.423
4.830	3.065	1.500	3.060	3.070
5.170	3.233	2.000	3.226	3.240
5.580	3.402	6.000	3.381	3.423
6.170	3.606	16.000	3.551	3.661

6.420	3.693	21.000	3.621	3.765
6.750	3.809	30.000	3.706	3.912
7.250	3.910	41.000	3.769	4.051
7.610	3.811	61.000	3.601	4.021
7.750	3.812	66.000	3.585	4.039
8.100	3.813	81.000	3.534	4.092
8.510	3.814	101.000	3.466	4.162

Hydrograph Detention Basin Routing

Graph values: 'I'= unit inflow; 'O'=outflow at time shown

Time (Hours)	Inflow (CFS)	Outflow (CFS)	Storage (Ac.Ft)	.0 1.8 3.70 5.55 7.39	Depth (Ft.)
0.083	0.11	0.01	0.000	O	0.00
0.167	0.32	0.03	0.002	OI	0.00
0.250	0.38	0.06	0.004	OI	0.01
0.333	0.46	0.10	0.006	OI	0.02
0.417	0.58	0.15	0.009	O I	0.02
0.500	0.62	0.20	0.012	O I	0.03
0.583	0.64	0.25	0.014	|OI	0.04
0.667	0.65	0.29	0.017	|OI	0.05
0.750	0.65	0.33	0.019	|OI	0.05
0.833	0.71	0.37	0.022	|O I	0.06
0.917	0.81	0.42	0.024	|O I	0.07
1.000	0.84	0.46	0.027	|O I	0.07
1.083	0.80	0.50	0.029	| OI	0.08
1.167	0.70	0.51	0.031	| OI	0.09
1.250	0.68	0.51	0.032	| O	0.09
1.333	0.67	0.51	0.033	| O	0.09
1.417	0.66	0.52	0.034	| O	0.10
1.500	0.66	0.52	0.035	| O	0.10
1.583	0.65	0.52	0.036	| O	0.10
1.667	0.65	0.53	0.037	| O	0.10
1.750	0.65	0.53	0.038	| O	0.11
1.833	0.71	0.53	0.039	| OI	0.11
1.917	0.81	0.54	0.040	| OI	0.11
2.000	0.84	0.55	0.042	| OI	0.12
2.083	0.86	0.55	0.044	| OI	0.13
2.167	0.86	0.56	0.047	| OI	0.13
2.250	0.87	0.57	0.049	| OI	0.14
2.333	0.87	0.58	0.051	| OI	0.14
2.417	0.87	0.58	0.053	| OI	0.15
2.500	0.87	0.59	0.055	| OI	0.15
2.583	0.93	0.60	0.057	| O I	0.16
2.667	1.03	0.61	0.059	| O I	0.17
2.750	1.06	0.62	0.062	| O I	0.18
2.833	1.07	0.63	0.065	| O I	0.19
2.917	1.08	0.64	0.069	| O I	0.20
3.000	1.09	0.65	0.072	| O I	0.20
3.083	1.09	0.66	0.075	| O I	0.21
3.167	1.09	0.67	0.078	| O I	0.22
3.250	1.09	0.68	0.080	| O I	0.23
3.333	1.09	0.69	0.083	| O I	0.24
3.417	1.09	0.70	0.086	| OI	0.25
3.500	1.09	0.71	0.089	| OI	0.25
3.583	1.09	0.72	0.091	| OI	0.26
3.667	1.09	0.72	0.094	| OI	0.27
3.750	1.09	0.73	0.096	| OI	0.28
3.833	1.14	0.74	0.099	| OI	0.28
3.917	1.25	0.75	0.102	| O I	0.29
4.000	1.28	0.77	0.105	| O I	0.30
4.083	1.29	0.78	0.109	| O I	0.31
4.167	1.30	0.79	0.112	| O I	0.32
4.250	1.30	0.80	0.116	| O I	0.33
4.333	1.36	0.81	0.120	| O I	0.34
4.417	1.47	0.83	0.124	| O I	0.36
4.500	1.50	0.84	0.128	| O I	0.37

4.583	1.51	0.86	0.133	O I				0.38
4.667	1.52	0.88	0.137	O I				0.40
4.750	1.52	0.89	0.141	O I				0.41
4.833	1.58	0.91	0.146	O I				0.42
4.917	1.69	0.92	0.151	O I				0.44
5.000	1.72	0.94	0.156	O I				0.45
5.083	1.62	0.96	0.161	O I				0.47
5.167	1.42	0.97	0.165	O I				0.48
5.250	1.36	0.98	0.168	OI				0.48
5.333	1.39	0.99	0.170	O I				0.49
5.417	1.48	1.00	0.174	O I				0.50
5.500	1.50	1.00	0.177	O I				0.51
5.583	1.56	1.00	0.181	O I				0.52
5.667	1.68	1.00	0.185	O I				0.53
5.750	1.71	1.00	0.190	O I				0.55
5.833	1.73	1.00	0.195	O I				0.56
5.917	1.74	1.00	0.200	O I				0.58
6.000	1.74	1.00	0.205	O I				0.59
6.083	1.80	1.00	0.210	O I				0.61
6.167	1.90	1.00	0.216	O I				0.62
6.250	1.93	1.00	0.222	O I				0.64
6.333	1.95	1.00	0.229	O I				0.66
6.417	1.95	1.00	0.235	O I				0.68
6.500	1.96	1.00	0.242	O I				0.70
6.583	2.02	1.00	0.249	O I				0.72
6.667	2.12	1.00	0.256	O I				0.74
6.750	2.15	1.00	0.264	O I				0.75
6.833	2.16	1.00	0.272	O I				0.77
6.917	2.17	1.00	0.280	O I				0.78
7.000	2.18	1.00	0.288	O I				0.79
7.083	2.18	1.00	0.296	O I				0.80
7.167	2.18	1.00	0.304	O I				0.81
7.250	2.18	1.00	0.312	O I				0.82
7.333	2.23	1.00	0.321	O I				0.83
7.417	2.34	1.00	0.329	O I				0.84
7.500	2.37	1.00	0.339	O I				0.85
7.583	2.44	1.00	0.348	O I				0.87
7.667	2.55	1.00	0.359	O I				0.88
7.750	2.58	1.00	0.369	O I				0.89
7.833	2.65	1.00	0.381	O I				0.91
7.917	2.77	1.00	0.392	O I				0.92
8.000	2.80	1.00	0.405	O I				0.94
8.083	2.92	1.00	0.418	O I				0.96
8.167	3.15	1.00	0.432	O I				0.97
8.250	3.21	1.00	0.447	O I				0.99
8.333	3.24	1.00	0.462	O I				1.01
8.417	3.25	1.00	0.477	O I				1.04
8.500	3.26	1.00	0.493	O I				1.06
8.583	3.32	1.00	0.509	O I				1.08
8.667	3.43	1.00	0.525	O I				1.10
8.750	3.46	1.00	0.542	O I				1.12
8.833	3.53	1.00	0.559	O I				1.14
8.917	3.64	1.00	0.577	O I				1.17
9.000	3.67	1.00	0.595	O I				1.19
9.083	3.80	1.00	0.614	O I				1.22
9.167	4.02	1.00	0.634	O I				1.24
9.250	4.08	1.00	0.655	O I				1.27
9.333	4.16	1.00	0.676	O I				1.30
9.417	4.29	1.00	0.699	O I				1.33
9.500	4.32	1.00	0.721	O I				1.36
9.583	4.40	1.00	0.745	O I				1.39
9.667	4.51	1.00	0.768	O I				1.42
9.750	4.55	1.00	0.793	O I				1.46
9.833	4.62	1.00	0.817	O I				1.49
9.917	4.73	1.00	0.843	O I				1.52
10.000	4.76	1.00	0.868	O I				1.56
10.083	4.41	1.00	0.893	O I				1.59
10.167	3.67	1.00	0.914	O I				1.62
10.250	3.47	1.00	0.932	O I				1.64

10.333	3.38	1.00	0.948		O		I		1.66
10.417	3.33	1.00	0.965		O		I		1.68
10.500	3.29	1.00	0.981		O		I		1.71
10.583	3.54	1.00	0.997		O		I		1.73
10.667	4.07	1.00	1.017		O		I		1.75
10.750	4.22	1.00	1.038		O		I		1.78
10.833	4.28	1.00	1.061		O		I		1.81
10.917	4.32	1.00	1.083		O		I		1.84
11.000	4.34	1.00	1.106		O		I		1.87
11.083	4.31	1.00	1.129		O		I		1.90
11.167	4.20	1.00	1.152		O		I		1.93
11.250	4.17	1.00	1.173		O		I		1.96
11.333	4.16	1.00	1.195		O		I		1.99
11.417	4.15	1.00	1.217		O		I		2.02
11.500	4.15	1.00	1.239		O		I		2.05
11.583	4.04	1.00	1.260		O		I		2.08
11.667	3.82	1.00	1.280		O		I		2.11
11.750	3.76	1.00	1.299		O		I		2.14
11.833	3.79	1.00	1.318		O		I		2.16
11.917	3.88	1.00	1.338		O		I		2.19
12.000	3.90	1.00	1.358		O		I		2.22
12.083	4.28	1.00	1.379		O		I		2.25
12.167	5.03	1.00	1.404		O		I		2.28
12.250	5.24	1.00	1.433		O		I		2.32
12.333	5.39	1.00	1.463		O		I		2.36
12.417	5.55	1.00	1.493		O		I		2.40
12.500	5.61	1.00	1.525		O		I		2.45
12.583	5.76	1.00	1.557		O		I		2.49
12.667	5.98	1.00	1.591		O		I		2.54
12.750	6.04	1.00	1.625		O		I		2.59
12.833	6.13	1.00	1.660		O		I		2.64
12.917	6.25	1.00	1.696		O		I		2.68
13.000	6.29	1.00	1.732		O		I		2.74
13.083	6.57	1.00	1.770		O		I		2.79
13.167	7.11	1.00	1.810		O		I		2.84
13.250	7.26	1.00	1.853		O		I		2.91
13.333	7.33	1.00	1.896		O		I		2.97
13.417	7.37	1.00	1.940		O		I		3.03
13.500	7.39	1.00	1.984		O		I		3.10
13.583	6.83	1.00	2.026		O		I		3.16
13.667	5.66	1.00	2.062		O		I		3.22
13.750	5.33	1.00	2.093		O		I		3.26
13.833	5.18	1.00	2.122		O		I		3.31
13.917	5.10	1.00	2.151		O		I		3.35
14.000	5.05	1.00	2.179		O		I		3.39
14.083	5.23	1.00	2.207		O		I		3.43
14.167	5.65	1.00	2.238		O		I		3.48
14.250	5.77	1.00	2.270		O		I		3.53
14.333	5.77	1.00	2.303		O		I		3.58
14.417	5.69	1.00	2.336		O		I		3.62
14.500	5.68	1.00	2.368		O		I		3.67
14.583	5.68	1.00	2.400		O		I		3.72
14.667	5.68	1.01	2.432		O		I		3.77
14.750	5.67	1.03	2.465		O		I		3.82
14.833	5.61	1.06	2.496		O		I		3.88
14.917	5.51	1.08	2.527		O		I		3.93
15.000	5.48	1.11	2.557		O		I		3.98
15.083	5.41	1.13	2.587		O		I		4.03
15.167	5.30	1.15	2.616		O		I		4.08
15.250	5.26	1.17	2.645		O		I		4.13
15.333	5.19	1.20	2.672		O		I		4.17
15.417	5.08	1.22	2.700		O		I		4.22
15.500	5.05	1.24	2.726		O		I		4.26
15.583	4.82	1.26	2.751		O		I		4.30
15.667	4.38	1.27	2.774		O		I		4.34
15.750	4.26	1.29	2.795		O		I		4.38
15.833	4.20	1.31	2.815		O		I		4.41
15.917	4.17	1.32	2.835		O		I		4.45
16.000	4.16	1.34	2.855		O		I		4.48

16.083	3.35	1.35	2.871	| O |	I |	|	|	4.51	
16.167	1.75	1.36	2.880	| O I|		|	|	4.52	
16.250	1.31	1.36	2.881	| O |		|	|	4.52	
16.333	1.10	1.36	2.880	| IO |		|	|	4.52	
16.417	0.99	1.35	2.878	| IO |		|	|	4.52	2YR-24HR WSE=1417.89+4.52=1422.41
16.500	0.93	1.35	2.875	| IO |		|	|	4.51	
16.583	0.82	1.35	2.872	| I O |		|	|	4.51	
16.667	0.71	1.35	2.868	| I O |		|	|	4.50	
16.750	0.68	1.34	2.863	| I O |		|	|	4.49	
16.833	0.67	1.34	2.859	| I O |		|	|	4.48	
16.917	0.66	1.34	2.854	| I O |		|	|	4.48	
17.000	0.66	1.33	2.849	| I O |		|	|	4.47	
17.083	0.76	1.33	2.845	| I O |		|	|	4.46	
17.167	0.97	1.33	2.842	| IO |		|	|	4.46	
17.250	1.03	1.33	2.840	| IO |		|	|	4.45	
17.333	1.06	1.32	2.838	| IO |		|	|	4.45	
17.417	1.07	1.32	2.836	| IO |		|	|	4.45	
17.500	1.08	1.32	2.834	| IO |		|	|	4.44	
17.583	1.09	1.32	2.833	| IO |		|	|	4.44	
17.667	1.09	1.32	2.831	| IO |		|	|	4.44	
17.750	1.09	1.32	2.829	| IO |		|	|	4.44	
17.833	1.04	1.32	2.828	| IO |		|	|	4.43	
17.917	0.93	1.31	2.825	| IO |		|	|	4.43	
18.000	0.90	1.31	2.823	| I O |		|	|	4.42	
18.083	0.89	1.31	2.820	| I O |		|	|	4.42	
18.167	0.88	1.31	2.817	| I O |		|	|	4.41	
18.250	0.88	1.31	2.814	| I O |		|	|	4.41	
18.333	0.87	1.30	2.811	| I O |		|	|	4.40	
18.417	0.87	1.30	2.808	| I O |		|	|	4.40	
18.500	0.87	1.30	2.805	| I O |		|	|	4.39	
18.583	0.82	1.30	2.802	| I O |		|	|	4.39	
18.667	0.71	1.29	2.798	| I O |		|	|	4.38	
18.750	0.68	1.29	2.794	| I O |		|	|	4.38	
18.833	0.62	1.29	2.790	| I O |		|	|	4.37	
18.917	0.50	1.28	2.785	| I O |		|	|	4.36	
19.000	0.47	1.28	2.779	| I O |		|	|	4.35	
19.083	0.50	1.27	2.774	| I O |		|	|	4.34	
19.167	0.60	1.27	2.769	| I O |		|	|	4.33	
19.250	0.63	1.27	2.764	| I O |		|	|	4.33	
19.333	0.69	1.26	2.760	| I O |		|	|	4.32	
19.417	0.81	1.26	2.757	| I O |		|	|	4.31	
19.500	0.84	1.26	2.754	| I O |		|	|	4.31	
19.583	0.80	1.26	2.751	| I O |		|	|	4.30	
19.667	0.70	1.25	2.747	| I O |		|	|	4.30	
19.750	0.68	1.25	2.743	| I O |		|	|	4.29	
19.833	0.62	1.25	2.739	| I O |		|	|	4.28	
19.917	0.50	1.24	2.735	| I O |		|	|	4.28	
20.000	0.47	1.24	2.729	| I O |		|	|	4.27	
20.083	0.50	1.24	2.724	| I O |		|	|	4.26	
20.167	0.60	1.23	2.719	| I O |		|	|	4.25	
20.250	0.63	1.23	2.715	| I O |		|	|	4.24	
20.333	0.64	1.23	2.711	| I O |		|	|	4.24	
20.417	0.65	1.22	2.707	| I O |		|	|	4.23	
20.500	0.65	1.22	2.703	| I O |		|	|	4.22	
20.583	0.65	1.22	2.699	| I O |		|	|	4.22	
20.667	0.65	1.21	2.695	| I O |		|	|	4.21	
20.750	0.65	1.21	2.692	| I O |		|	|	4.20	
20.833	0.60	1.21	2.688	| I O |		|	|	4.20	
20.917	0.49	1.20	2.683	| I O |		|	|	4.19	
21.000	0.46	1.20	2.678	| I O |		|	|	4.18	
21.083	0.50	1.20	2.673	| I O |		|	|	4.17	
21.167	0.60	1.19	2.669	| I O |		|	|	4.17	
21.250	0.63	1.19	2.665	| I O |		|	|	4.16	
21.333	0.59	1.19	2.661	| I O |		|	|	4.15	
21.417	0.49	1.18	2.656	| I O |		|	|	4.15	
21.500	0.46	1.18	2.651	|I O |		|	|	4.14	
21.583	0.50	1.18	2.647	| I O |		|	|	4.13	
21.667	0.60	1.17	2.642	| I O |		|	|	4.12	
21.750	0.63	1.17	2.639	| I O |		|	|	4.12	

21.833	0.59	1.17	2.635	| I O |	|	|	|	4.11
21.917	0.49	1.16	2.630	| I O |	|	|	|	4.10
22.000	0.46	1.16	2.626	|I O |	|	|	|	4.09
22.083	0.50	1.16	2.621	| I O |	|	|	|	4.09
22.167	0.60	1.15	2.617	| I O |	|	|	|	4.08
22.250	0.63	1.15	2.613	| I O |	|	|	|	4.07
22.333	0.59	1.15	2.609	| I O |	|	|	|	4.07
22.417	0.49	1.14	2.605	| I O |	|	|	|	4.06
22.500	0.46	1.14	2.601	|I O |	|	|	|	4.05
22.583	0.45	1.14	2.596	|I O |	|	|	|	4.04
22.667	0.44	1.13	2.591	|I O |	|	|	|	4.04
22.750	0.44	1.13	2.587	|I O |	|	|	|	4.03
22.833	0.44	1.13	2.582	|I O |	|	|	|	4.02
22.917	0.44	1.12	2.577	|I O |	|	|	|	4.01
23.000	0.44	1.12	2.572	|I O |	|	|	|	4.01
23.083	0.44	1.11	2.568	|I O |	|	|	|	4.00
23.167	0.44	1.11	2.563	|I O |	|	|	|	3.99
23.250	0.44	1.11	2.558	|I O |	|	|	|	3.98
23.333	0.44	1.10	2.554	|I O |	|	|	|	3.97
23.417	0.44	1.10	2.549	|I O |	|	|	|	3.97
23.500	0.44	1.10	2.545	|I O |	|	|	|	3.96
23.583	0.44	1.09	2.540	|I O |	|	|	|	3.95
23.667	0.44	1.09	2.536	|I O |	|	|	|	3.94
23.750	0.44	1.09	2.531	|I O |	|	|	|	3.94
23.833	0.44	1.08	2.527	|I O |	|	|	|	3.93
23.917	0.44	1.08	2.522	|I O |	|	|	|	3.92
24.000	0.44	1.08	2.518	|I O |	|	|	|	3.91
24.083	0.33	1.07	2.513	|I O |	|	|	|	3.91
24.167	0.12	1.07	2.507	I O |	|	|	|	3.90
24.250	0.06	1.06	2.500	I O |	|	|	|	3.88
24.333	0.03	1.06	2.493	I O |	|	|	|	3.87
24.417	0.02	1.05	2.486	I O |	|	|	|	3.86
24.500	0.01	1.05	2.479	I O |	|	|	|	3.85
24.583	0.00	1.04	2.472	I O |	|	|	|	3.84
24.667	0.00	1.03	2.465	I O |	|	|	|	3.83
24.750	0.00	1.03	2.458	I O |	|	|	|	3.81
24.833	0.00	1.02	2.451	I O |	|	|	|	3.80
24.917	0.00	1.02	2.444	I O |	|	|	|	3.79
25.000	0.00	1.01	2.437	I O |	|	|	|	3.78
25.083	0.00	1.01	2.430	I O |	|	|	|	3.77
25.167	0.00	1.00	2.423	I O |	|	|	|	3.75
25.250	0.00	1.00	2.416	I O |	|	|	|	3.74
25.333	0.00	1.00	2.409	I O |	|	|	|	3.73
25.417	0.00	1.00	2.402	I O |	|	|	|	3.72
25.500	0.00	1.00	2.395	I O |	|	|	|	3.71
25.583	0.00	1.00	2.388	I O |	|	|	|	3.70
25.667	0.00	1.00	2.381	I O |	|	|	|	3.69
25.750	0.00	1.00	2.375	I O |	|	|	|	3.68
25.833	0.00	1.00	2.368	I O |	|	|	|	3.67
25.917	0.00	1.00	2.361	I O |	|	|	|	3.66
26.000	0.00	1.00	2.354	I O |	|	|	|	3.65
26.083	0.00	1.00	2.347	I O |	|	|	|	3.64
26.167	0.00	1.00	2.340	I O |	|	|	|	3.63
26.250	0.00	1.00	2.333	I O |	|	|	|	3.62
26.333	0.00	1.00	2.326	I O |	|	|	|	3.61
26.417	0.00	1.00	2.319	I O |	|	|	|	3.60
26.500	0.00	1.00	2.313	I O |	|	|	|	3.59
26.583	0.00	1.00	2.306	I O |	|	|	|	3.58
26.667	0.00	1.00	2.299	I O |	|	|	|	3.57
26.750	0.00	1.00	2.292	I O |	|	|	|	3.56
26.833	0.00	1.00	2.285	I O |	|	|	|	3.55
26.917	0.00	1.00	2.278	I O |	|	|	|	3.54
27.000	0.00	1.00	2.271	I O |	|	|	|	3.53
27.083	0.00	1.00	2.264	I O |	|	|	|	3.52
27.167	0.00	1.00	2.257	I O |	|	|	|	3.51
27.250	0.00	1.00	2.251	I O |	|	|	|	3.50
27.333	0.00	1.00	2.244	I O |	|	|	|	3.49
27.417	0.00	1.00	2.237	I O |	|	|	|	3.48
27.500	0.00	1.00	2.230	I O |	|	|	|	3.47

27.583	0.00	1.00	2.223	I	O	|	|	|	|	3.46
27.667	0.00	1.00	2.216	I	O	|	|	|	|	3.45
27.750	0.00	1.00	2.209	I	O	|	|	|	|	3.44
27.833	0.00	1.00	2.202	I	O	|	|	|	|	3.43
27.917	0.00	1.00	2.195	I	O	|	|	|	|	3.42
28.000	0.00	1.00	2.189	I	O	|	|	|	|	3.40
28.083	0.00	1.00	2.182	I	O	|	|	|	|	3.39
28.167	0.00	1.00	2.175	I	O	|	|	|	|	3.38
28.250	0.00	1.00	2.168	I	O	|	|	|	|	3.37
28.333	0.00	1.00	2.161	I	O	|	|	|	|	3.36
28.417	0.00	1.00	2.154	I	O	|	|	|	|	3.35
28.500	0.00	1.00	2.147	I	O	|	|	|	|	3.34
28.583	0.00	1.00	2.140	I	O	|	|	|	|	3.33
28.667	0.00	1.00	2.134	I	O	|	|	|	|	3.32
28.750	0.00	1.00	2.127	I	O	|	|	|	|	3.31
28.833	0.00	1.00	2.120	I	O	|	|	|	|	3.30
28.917	0.00	1.00	2.113	I	O	|	|	|	|	3.29
29.000	0.00	1.00	2.106	I	O	|	|	|	|	3.28
29.083	0.00	1.00	2.099	I	O	|	|	|	|	3.27
29.167	0.00	1.00	2.092	I	O	|	|	|	|	3.26
29.250	0.00	1.00	2.085	I	O	|	|	|	|	3.25
29.333	0.00	1.00	2.078	I	O	|	|	|	|	3.24
29.417	0.00	1.00	2.072	I	O	|	|	|	|	3.23
29.500	0.00	1.00	2.065	I	O	|	|	|	|	3.22
29.583	0.00	1.00	2.058	I	O	|	|	|	|	3.21
29.667	0.00	1.00	2.051	I	O	|	|	|	|	3.20
29.750	0.00	1.00	2.044	I	O	|	|	|	|	3.19
29.833	0.00	1.00	2.037	I	O	|	|	|	|	3.18
29.917	0.00	1.00	2.030	I	O	|	|	|	|	3.17
30.000	0.00	1.00	2.023	I	O	|	|	|	|	3.16
30.083	0.00	1.00	2.016	I	O	|	|	|	|	3.15
30.167	0.00	1.00	2.010	I	O	|	|	|	|	3.14
30.250	0.00	1.00	2.003	I	O	|	|	|	|	3.13
30.333	0.00	1.00	1.996	I	O	|	|	|	|	3.12
30.417	0.00	1.00	1.989	I	O	|	|	|	|	3.11
30.500	0.00	1.00	1.982	I	O	|	|	|	|	3.10
30.583	0.00	1.00	1.975	I	O	|	|	|	|	3.09
30.667	0.00	1.00	1.968	I	O	|	|	|	|	3.08
30.750	0.00	1.00	1.961	I	O	|	|	|	|	3.07
30.833	0.00	1.00	1.954	I	O	|	|	|	|	3.06
30.917	0.00	1.00	1.948	I	O	|	|	|	|	3.05
31.000	0.00	1.00	1.941	I	O	|	|	|	|	3.04
31.083	0.00	1.00	1.934	I	O	|	|	|	|	3.03
31.167	0.00	1.00	1.927	I	O	|	|	|	|	3.01
31.250	0.00	1.00	1.920	I	O	|	|	|	|	3.00
31.333	0.00	1.00	1.913	I	O	|	|	|	|	2.99
31.417	0.00	1.00	1.906	I	O	|	|	|	|	2.98
31.500	0.00	1.00	1.899	I	O	|	|	|	|	2.97
31.583	0.00	1.00	1.892	I	O	|	|	|	|	2.96
31.667	0.00	1.00	1.886	I	O	|	|	|	|	2.95
31.750	0.00	1.00	1.879	I	O	|	|	|	|	2.94
31.833	0.00	1.00	1.872	I	O	|	|	|	|	2.93
31.917	0.00	1.00	1.865	I	O	|	|	|	|	2.92
32.000	0.00	1.00	1.858	I	O	|	|	|	|	2.91
32.083	0.00	1.00	1.851	I	O	|	|	|	|	2.90
32.167	0.00	1.00	1.844	I	O	|	|	|	|	2.89
32.250	0.00	1.00	1.837	I	O	|	|	|	|	2.88
32.333	0.00	1.00	1.830	I	O	|	|	|	|	2.87
32.417	0.00	1.00	1.824	I	O	|	|	|	|	2.86
32.500	0.00	1.00	1.817	I	O	|	|	|	|	2.85
32.583	0.00	1.00	1.810	I	O	|	|	|	|	2.84
32.667	0.00	1.00	1.803	I	O	|	|	|	|	2.83
32.750	0.00	1.00	1.796	I	O	|	|	|	|	2.82
32.833	0.00	1.00	1.789	I	O	|	|	|	|	2.81
32.917	0.00	1.00	1.782	I	O	|	|	|	|	2.80
33.000	0.00	1.00	1.775	I	O	|	|	|	|	2.79
33.083	0.00	1.00	1.768	I	O	|	|	|	|	2.79
33.167	0.00	1.00	1.762	I	O	|	|	|	|	2.78
33.250	0.00	1.00	1.755	I	O	|	|	|	|	2.77

33.333	0.00	1.00	1.748	I	O	|	|	|	|	2.76
33.417	0.00	1.00	1.741	I	O	|	|	|	|	2.75
33.500	0.00	1.00	1.734	I	O	|	|	|	|	2.74
33.583	0.00	1.00	1.727	I	O	|	|	|	|	2.73
33.667	0.00	1.00	1.720	I	O	|	|	|	|	2.72
33.750	0.00	1.00	1.713	I	O	|	|	|	|	2.71
33.833	0.00	1.00	1.707	I	O	|	|	|	|	2.70
33.917	0.00	1.00	1.700	I	O	|	|	|	|	2.69
34.000	0.00	1.00	1.693	I	O	|	|	|	|	2.68
34.083	0.00	1.00	1.686	I	O	|	|	|	|	2.67
34.167	0.00	1.00	1.679	I	O	|	|	|	|	2.66
34.250	0.00	1.00	1.672	I	O	|	|	|	|	2.65
34.333	0.00	1.00	1.665	I	O	|	|	|	|	2.64
34.417	0.00	1.00	1.658	I	O	|	|	|	|	2.63
34.500	0.00	1.00	1.651	I	O	|	|	|	|	2.62
34.583	0.00	1.00	1.645	I	O	|	|	|	|	2.61
34.667	0.00	1.00	1.638	I	O	|	|	|	|	2.60
34.750	0.00	1.00	1.631	I	O	|	|	|	|	2.59
34.833	0.00	1.00	1.624	I	O	|	|	|	|	2.58
34.917	0.00	1.00	1.617	I	O	|	|	|	|	2.58
35.000	0.00	1.00	1.610	I	O	|	|	|	|	2.57
35.083	0.00	1.00	1.603	I	O	|	|	|	|	2.56
35.167	0.00	1.00	1.596	I	O	|	|	|	|	2.55
35.250	0.00	1.00	1.589	I	O	|	|	|	|	2.54
35.333	0.00	1.00	1.583	I	O	|	|	|	|	2.53
35.417	0.00	1.00	1.576	I	O	|	|	|	|	2.52
35.500	0.00	1.00	1.569	I	O	|	|	|	|	2.51
35.583	0.00	1.00	1.562	I	O	|	|	|	|	2.50
35.667	0.00	1.00	1.555	I	O	|	|	|	|	2.49
35.750	0.00	1.00	1.548	I	O	|	|	|	|	2.48
35.833	0.00	1.00	1.541	I	O	|	|	|	|	2.47
35.917	0.00	1.00	1.534	I	O	|	|	|	|	2.46
36.000	0.00	1.00	1.527	I	O	|	|	|	|	2.45
36.083	0.00	1.00	1.521	I	O	|	|	|	|	2.44
36.167	0.00	1.00	1.514	I	O	|	|	|	|	2.43
36.250	0.00	1.00	1.507	I	O	|	|	|	|	2.42
36.333	0.00	1.00	1.500	I	O	|	|	|	|	2.41
36.417	0.00	1.00	1.493	I	O	|	|	|	|	2.40
36.500	0.00	1.00	1.486	I	O	|	|	|	|	2.39
36.583	0.00	1.00	1.479	I	O	|	|	|	|	2.38
36.667	0.00	1.00	1.472	I	O	|	|	|	|	2.38
36.750	0.00	1.00	1.465	I	O	|	|	|	|	2.37
36.833	0.00	1.00	1.459	I	O	|	|	|	|	2.36
36.917	0.00	1.00	1.452	I	O	|	|	|	|	2.35
37.000	0.00	1.00	1.445	I	O	|	|	|	|	2.34
37.083	0.00	1.00	1.438	I	O	|	|	|	|	2.33
37.167	0.00	1.00	1.431	I	O	|	|	|	|	2.32
37.250	0.00	1.00	1.424	I	O	|	|	|	|	2.31
37.333	0.00	1.00	1.417	I	O	|	|	|	|	2.30
37.417	0.00	1.00	1.410	I	O	|	|	|	|	2.29
37.500	0.00	1.00	1.403	I	O	|	|	|	|	2.28
37.583	0.00	1.00	1.397	I	O	|	|	|	|	2.27
37.667	0.00	1.00	1.390	I	O	|	|	|	|	2.26
37.750	0.00	1.00	1.383	I	O	|	|	|	|	2.25
37.833	0.00	1.00	1.376	I	O	|	|	|	|	2.24
37.917	0.00	1.00	1.369	I	O	|	|	|	|	2.23
38.000	0.00	1.00	1.362	I	O	|	|	|	|	2.22
38.083	0.00	1.00	1.355	I	O	|	|	|	|	2.21
38.167	0.00	1.00	1.348	I	O	|	|	|	|	2.20
38.250	0.00	1.00	1.341	I	O	|	|	|	|	2.19
38.333	0.00	1.00	1.335	I	O	|	|	|	|	2.18
38.417	0.00	1.00	1.328	I	O	|	|	|	|	2.18
38.500	0.00	1.00	1.321	I	O	|	|	|	|	2.17
38.583	0.00	1.00	1.314	I	O	|	|	|	|	2.16
38.667	0.00	1.00	1.307	I	O	|	|	|	|	2.15
38.750	0.00	1.00	1.300	I	O	|	|	|	|	2.14
38.833	0.00	1.00	1.293	I	O	|	|	|	|	2.13
38.917	0.00	1.00	1.286	I	O	|	|	|	|	2.12
39.000	0.00	1.00	1.280	I	O	|	|	|	|	2.11

39.083	0.00	1.00	1.273	I	O					2.10
39.167	0.00	1.00	1.266	I	O					2.09
39.250	0.00	1.00	1.259	I	O					2.08
39.333	0.00	1.00	1.252	I	O					2.07
39.417	0.00	1.00	1.245	I	O					2.06
39.500	0.00	1.00	1.238	I	O					2.05
39.583	0.00	1.00	1.231	I	O					2.04
39.667	0.00	1.00	1.224	I	O					2.03
39.750	0.00	1.00	1.218	I	O					2.02
39.833	0.00	1.00	1.211	I	O					2.01
39.917	0.00	1.00	1.204	I	O					2.00
40.000	0.00	1.00	1.197	I	O					1.99
40.083	0.00	1.00	1.190	I	O					1.99
40.167	0.00	1.00	1.183	I	O					1.98
40.250	0.00	1.00	1.176	I	O					1.97
40.333	0.00	1.00	1.169	I	O					1.96
40.417	0.00	1.00	1.162	I	O					1.95
40.500	0.00	1.00	1.156	I	O					1.94
40.583	0.00	1.00	1.149	I	O					1.93
40.667	0.00	1.00	1.142	I	O					1.92
40.750	0.00	1.00	1.135	I	O					1.91
40.833	0.00	1.00	1.128	I	O					1.90
40.917	0.00	1.00	1.121	I	O					1.89
41.000	0.00	1.00	1.114	I	O					1.88
41.083	0.00	1.00	1.107	I	O					1.88
41.167	0.00	1.00	1.100	I	O					1.87
41.250	0.00	1.00	1.094	I	O					1.86
41.333	0.00	1.00	1.087	I	O					1.85
41.417	0.00	1.00	1.080	I	O					1.84
41.500	0.00	1.00	1.073	I	O					1.83
41.583	0.00	1.00	1.066	I	O					1.82
41.667	0.00	1.00	1.059	I	O					1.81
41.750	0.00	1.00	1.052	I	O					1.80
41.833	0.00	1.00	1.045	I	O					1.79
41.917	0.00	1.00	1.038	I	O					1.78
42.000	0.00	1.00	1.032	I	O					1.77
42.083	0.00	1.00	1.025	I	O					1.76
42.167	0.00	1.00	1.018	I	O					1.76
42.250	0.00	1.00	1.011	I	O					1.75
42.333	0.00	1.00	1.004	I	O					1.74
42.417	0.00	1.00	0.997	I	O					1.73
42.500	0.00	1.00	0.990	I	O					1.72
42.583	0.00	1.00	0.983	I	O					1.71
42.667	0.00	1.00	0.976	I	O					1.70
42.750	0.00	1.00	0.970	I	O					1.69
42.833	0.00	1.00	0.963	I	O					1.68
42.917	0.00	1.00	0.956	I	O					1.67
43.000	0.00	1.00	0.949	I	O					1.66
43.083	0.00	1.00	0.942	I	O					1.65
43.167	0.00	1.00	0.935	I	O					1.65
43.250	0.00	1.00	0.928	I	O					1.64
43.333	0.00	1.00	0.921	I	O					1.63
43.417	0.00	1.00	0.914	I	O					1.62
43.500	0.00	1.00	0.908	I	O					1.61
43.583	0.00	1.00	0.901	I	O					1.60
43.667	0.00	1.00	0.894	I	O					1.59
43.750	0.00	1.00	0.887	I	O					1.58
43.833	0.00	1.00	0.880	I	O					1.57
43.917	0.00	1.00	0.873	I	O					1.56
44.000	0.00	1.00	0.866	I	O					1.55
44.083	0.00	1.00	0.859	I	O					1.54
44.167	0.00	1.00	0.853	I	O					1.54
44.250	0.00	1.00	0.846	I	O					1.53
44.333	0.00	1.00	0.839	I	O					1.52
44.417	0.00	1.00	0.832	I	O					1.51
44.500	0.00	1.00	0.825	I	O					1.50
44.583	0.00	1.00	0.818	I	O					1.49
44.667	0.00	1.00	0.811	I	O					1.48
44.750	0.00	1.00	0.804	I	O					1.47

44.833	0.00	1.00	0.797	I	O	|	|	|	|	1.46
44.917	0.00	1.00	0.791	I	O	|	|	|	|	1.45
45.000	0.00	1.00	0.784	I	O	|	|	|	|	1.44
45.083	0.00	1.00	0.777	I	O	|	|	|	|	1.43
45.167	0.00	1.00	0.770	I	O	|	|	|	|	1.43
45.250	0.00	1.00	0.763	I	O	|	|	|	|	1.42
45.333	0.00	1.00	0.756	I	O	|	|	|	|	1.41
45.417	0.00	1.00	0.749	I	O	|	|	|	|	1.40
45.500	0.00	1.00	0.742	I	O	|	|	|	|	1.39
45.583	0.00	1.00	0.735	I	O	|	|	|	|	1.38
45.667	0.00	1.00	0.729	I	O	|	|	|	|	1.37
45.750	0.00	1.00	0.722	I	O	|	|	|	|	1.36
45.833	0.00	1.00	0.715	I	O	|	|	|	|	1.35
45.917	0.00	1.00	0.708	I	O	|	|	|	|	1.34
46.000	0.00	1.00	0.701	I	O	|	|	|	|	1.33
46.083	0.00	1.00	0.694	I	O	|	|	|	|	1.32
46.167	0.00	1.00	0.687	I	O	|	|	|	|	1.31
46.250	0.00	1.00	0.680	I	O	|	|	|	|	1.31
46.333	0.00	1.00	0.673	I	O	|	|	|	|	1.30
46.417	0.00	1.00	0.667	I	O	|	|	|	|	1.29
46.500	0.00	1.00	0.660	I	O	|	|	|	|	1.28
46.583	0.00	1.00	0.653	I	O	|	|	|	|	1.27
46.667	0.00	1.00	0.646	I	O	|	|	|	|	1.26
46.750	0.00	1.00	0.639	I	O	|	|	|	|	1.25
46.833	0.00	1.00	0.632	I	O	|	|	|	|	1.24
46.917	0.00	1.00	0.625	I	O	|	|	|	|	1.23
47.000	0.00	1.00	0.618	I	O	|	|	|	|	1.22
47.083	0.00	1.00	0.611	I	O	|	|	|	|	1.21
47.167	0.00	1.00	0.605	I	O	|	|	|	|	1.20
47.250	0.00	1.00	0.598	I	O	|	|	|	|	1.20
47.333	0.00	1.00	0.591	I	O	|	|	|	|	1.19
47.417	0.00	1.00	0.584	I	O	|	|	|	|	1.18
47.500	0.00	1.00	0.577	I	O	|	|	|	|	1.17
47.583	0.00	1.00	0.570	I	O	|	|	|	|	1.16
47.667	0.00	1.00	0.563	I	O	|	|	|	|	1.15
47.750	0.00	1.00	0.556	I	O	|	|	|	|	1.14
47.833	0.00	1.00	0.549	I	O	|	|	|	|	1.13
47.917	0.00	1.00	0.543	I	O	|	|	|	|	1.12
48.000	0.00	1.00	0.536	I	O	|	|	|	|	1.11
48.083	0.00	1.00	0.529	I	O	|	|	|	|	1.10
48.167	0.00	1.00	0.522	I	O	|	|	|	|	1.09
48.250	0.00	1.00	0.515	I	O	|	|	|	|	1.09
48.333	0.00	1.00	0.508	I	O	|	|	|	|	1.08
48.417	0.00	1.00	0.501	I	O	|	|	|	|	1.07
48.500	0.00	1.00	0.494	I	O	|	|	|	|	1.06
48.583	0.00	1.00	0.487	I	O	|	|	|	|	1.05
48.667	0.00	1.00	0.481	I	O	|	|	|	|	1.04
48.750	0.00	1.00	0.474	I	O	|	|	|	|	1.03
48.833	0.00	1.00	0.467	I	O	|	|	|	|	1.02
48.917	0.00	1.00	0.460	I	O	|	|	|	|	1.01
49.000	0.00	1.00	0.453	I	O	|	|	|	|	1.00
49.083	0.00	1.00	0.446	I	O	|	|	|	|	0.99
49.167	0.00	1.00	0.439	I	O	|	|	|	|	0.98
49.250	0.00	1.00	0.432	I	O	|	|	|	|	0.98
49.333	0.00	1.00	0.426	I	O	|	|	|	|	0.97
49.417	0.00	1.00	0.419	I	O	|	|	|	|	0.96
49.500	0.00	1.00	0.412	I	O	|	|	|	|	0.95
49.583	0.00	1.00	0.405	I	O	|	|	|	|	0.94
49.667	0.00	1.00	0.398	I	O	|	|	|	|	0.93
49.750	0.00	1.00	0.391	I	O	|	|	|	|	0.92
49.833	0.00	1.00	0.384	I	O	|	|	|	|	0.91
49.917	0.00	1.00	0.377	I	O	|	|	|	|	0.90
50.000	0.00	1.00	0.370	I	O	|	|	|	|	0.89
50.083	0.00	1.00	0.364	I	O	|	|	|	|	0.89
50.167	0.00	1.00	0.357	I	O	|	|	|	|	0.88
50.250	0.00	1.00	0.350	I	O	|	|	|	|	0.87
50.333	0.00	1.00	0.343	I	O	|	|	|	|	0.86
50.417	0.00	1.00	0.336	I	O	|	|	|	|	0.85
50.500	0.00	1.00	0.329	I	O	|	|	|	|	0.84

50.583	0.00	1.00	0.322	I	O	|	|	|	0.83
50.667	0.00	1.00	0.315	I	O	|	|	|	0.82
50.750	0.00	1.00	0.308	I	O	|	|	|	0.81
50.833	0.00	1.00	0.302	I	O	|	|	|	0.80
50.917	0.00	1.00	0.295	I	O	|	|	|	0.80
51.000	0.00	1.00	0.288	I	O	|	|	|	0.79
51.083	0.00	1.00	0.281	I	O	|	|	|	0.78
51.167	0.00	1.00	0.274	I	O	|	|	|	0.77
51.250	0.00	1.00	0.267	I	O	|	|	|	0.76
51.333	0.00	1.00	0.260	I	O	|	|	|	0.75
51.417	0.00	1.00	0.253	I	O	|	|	|	0.73
51.500	0.00	1.00	0.246	I	O	|	|	|	0.71
51.583	0.00	1.00	0.240	I	O	|	|	|	0.69
51.667	0.00	1.00	0.233	I	O	|	|	|	0.67
51.750	0.00	1.00	0.226	I	O	|	|	|	0.65
51.833	0.00	1.00	0.219	I	O	|	|	|	0.63
51.917	0.00	1.00	0.212	I	O	|	|	|	0.61
52.000	0.00	1.00	0.205	I	O	|	|	|	0.59
52.083	0.00	1.00	0.198	I	O	|	|	|	0.57
52.167	0.00	1.00	0.191	I	O	|	|	|	0.55
52.250	0.00	1.00	0.184	I	O	|	|	|	0.53
52.333	0.00	1.00	0.178	I	O	|	|	|	0.51
52.417	0.00	0.99	0.171	I	O	|	|	|	0.49
52.500	0.00	0.97	0.164	I	O	|	|	|	0.47
52.583	0.00	0.95	0.157	I	O	|	|	|	0.45
52.667	0.00	0.92	0.151	I	O	|	|	|	0.44
52.750	0.00	0.90	0.145	I	O	|	|	|	0.42
52.833	0.00	0.88	0.139	I	O	|	|	|	0.40
52.917	0.00	0.86	0.133	I	O	|	|	|	0.38
53.000	0.00	0.84	0.127	I	O	|	|	|	0.36
53.083	0.00	0.82	0.121	I	O	|	|	|	0.35
53.167	0.00	0.80	0.115	I	O	|	|	|	0.33
53.250	0.00	0.78	0.110	I	O	|	|	|	0.32
53.333	0.00	0.76	0.105	I	O	|	|	|	0.30
53.417	0.00	0.74	0.099	I	O	|	|	|	0.29
53.500	0.00	0.73	0.094	I	O	|	|	|	0.27
53.583	0.00	0.71	0.089	I	O	|	|	|	0.26
53.667	0.00	0.69	0.085	I	O	|	|	|	0.24
53.750	0.00	0.68	0.080	I	O	|	|	|	0.23
53.833	0.00	0.66	0.075	I	O	|	|	|	0.21
53.917	0.00	0.65	0.071	I	O	|	|	|	0.20
54.000	0.00	0.63	0.066	I	O	|	|	|	0.19
54.083	0.00	0.61	0.062	I	O	|	|	|	0.18
54.167	0.00	0.60	0.058	I	O	|	|	|	0.16
54.250	0.00	0.59	0.054	I	O	|	|	|	0.15
54.333	0.00	0.57	0.050	I	O	|	|	|	0.14
54.417	0.00	0.56	0.046	I	O	|	|	|	0.13
54.500	0.00	0.55	0.042	I	O	|	|	|	0.12
54.583	0.00	0.53	0.038	I	O	|	|	|	0.11
54.667	0.00	0.52	0.035	I	O	|	|	|	0.10
54.750	0.00	0.51	0.031	I	O	|	|	|	0.09
54.833	0.00	0.48	0.028	I	O	|	|	|	0.08
54.917	0.00	0.43	0.025	I	O	|	|	|	0.07
55.000	0.00	0.38	0.022	I	O	|	|	|	0.06
55.083	0.00	0.34	0.020	I	O	|	|	|	0.05
55.167	0.00	0.30	0.017	I	O	|	|	|	0.05
55.250	0.00	0.27	0.015	I	O	|	|	|	0.04
55.333	0.00	0.24	0.014	I	O	|	|	|	0.04
55.417	0.00	0.21	0.012	O		|	|	|	0.03
55.500	0.00	0.19	0.011	O		|	|	|	0.03
55.583	0.00	0.16	0.010	O		|	|	|	0.03
55.667	0.00	0.15	0.008	O		|	|	|	0.02
55.750	0.00	0.13	0.008	O		|	|	|	0.02
55.833	0.00	0.12	0.007	O		|	|	|	0.02
55.917	0.00	0.10	0.006	O		|	|	|	0.02
56.000	0.00	0.09	0.005	O		|	|	|	0.01
56.083	0.00	0.08	0.005	O		|	|	|	0.01
56.167	0.00	0.07	0.004	O		|	|	|	0.01
56.250	0.00	0.06	0.004	O		|	|	|	0.01

```
56.333    0.00    0.06      0.003  O       |       |       |       |     0.01
56.417    0.00    0.05      0.003  O       |       |       |       |     0.01
56.500    0.00    0.04      0.003  O       |       |       |       |     0.01
56.583    0.00    0.04      0.002  O       |       |       |       |     0.01
56.667    0.00    0.04      0.002  O       |       |       |       |     0.01
56.750    0.00    0.03      0.002  O       |       |       |       |     0.00
56.833    0.00    0.03      0.002  O       |       |       |       |     0.00
56.917    0.00    0.02      0.001  O       |       |       |       |     0.00
57.000    0.00    0.02      0.001  O       |       |       |       |     0.00
57.083    0.00    0.02      0.001  O       |       |       |       |     0.00
57.167    0.00    0.02      0.001  O       |       |       |       |     0.00
57.250    0.00    0.02      0.001  O       |       |       |       |     0.00
57.333    0.00    0.01      0.001  O       |       |       |       |     0.00
57.417    0.00    0.01      0.001  O       |       |       |       |     0.00
57.500    0.00    0.01      0.001  O       |       |       |       |     0.00
57.583    0.00    0.01      0.001  O       |       |       |       |     0.00
57.667    0.00    0.01      0.000  O       |       |       |       |     0.00
57.750    0.00    0.01      0.000  O       |       |       |       |     0.00
57.833    0.00    0.01      0.000  O       |       |       |       |     0.00
57.917    0.00    0.01      0.000  O       |       |       |       |     0.00

****************************HYDROGRAPH DATA****************************
                Number of intervals =   695
                Time interval =    5.0 (Min.)
                Maximum/Peak flow rate =        1.357 (CFS)
                Total volume =       4.504 (Ac.Ft)
        Status of hydrographs being held in storage
                    Stream 1  Stream 2  Stream 3  Stream 4  Stream 5
        Peak (CFS)      0.000     0.000     0.000     0.000     0.000
        Vol (Ac.Ft)      0.000     0.000     0.000     0.000     0.000
************************************************************************

------------------------------------------------------------------------
```

EX. 2YR-24HR Q=1.304 CFS

%INCREASE=((1.357-1.304)/1.304)*100=4.1%

4.1% IS LESS THAN 5.0% THUS HCOC REQUIREMENTS ARE MET

Appendix 8: Source Control

Pollutant Sources/Source Control Checklist

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

How to use this worksheet (also see instructions in Section G of the WQMP Template):

1. Review Column 1 and identify which of these potential sources of stormwater pollutants apply to your site. Check each box that applies.
2. Review Column 2 and incorporate all of the corresponding applicable BMPs in your WQMP Exhibit.
3. Review Columns 3 and 4 and incorporate all of the corresponding applicable permanent controls and operational BMPs in your WQMP. Use the format shown in Table G.1on page 23 of this WQMP Template. Describe your specific BMPs in an accompanying narrative, and explain any special conditions or situations that required omitting BMPs or substituting alternative BMPs for those shown here.

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ A. **On-site storm drain inlets**	☒ **Locations of inlets.**	☒ **Mark all inlets with the words "Only Rain Down the Storm Drain" or similar. Catch Basin Markers may be available from the Riverside County Flood Control and Water Conservation District, call 951.955.1200 to verify.**	☒ **Maintain and periodically repaint or replace inlet markings.** ☒ **Provide stormwater pollution prevention information to new site owners, lessees, or operators.** ☒ **See applicable operational BMPs in Fact Sheet SC-44, "Drainage System Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** ☒ **Include the following in lease agreements: "Tenant shall not allow anyone to discharge anything to storm drains or to store or deposit materials so as to create a potential discharge to storm drains."**
☒ B. **Interior floor drains and elevator shaft sump pumps**		☒ **State that interior floor drains and elevator shaft sump pumps will be plumbed to sanitary sewer.**	☒ **Inspect and maintain drains to prevent blockages and overflow.**
☐ C. **Interior parking garages**		☐ **State that parking garage floor drains will be plumbed to the sanitary sewer.**	☐ **Inspect and maintain drains to prevent blockages and overflow.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ D1. **Need for future indoor & structural pest control**		☒ **Note building design features that discourage entry of pests.**	☒ **Provide Integrated Pest Management information to owners, lessees, and operators.**
☒ D2. **Landscape/ Outdoor Pesticide Use**	☐ **Show locations of native trees or areas of shrubs and ground cover to be undisturbed and retained.** ☐ **Show self-retaining landscape areas, if any.** ☒ **Show stormwater treatment and hydrograph modification management BMPs. (See instructions in Chapter 3, Step 5 and guidance in Chapter 5.)**	**State that final landscape plans will accomplish all of the following.** ☒ **Preserve existing native trees, shrubs, and ground cover to the maximum extent possible.** ☒ **Design landscaping to minimize irrigation and runoff, to promote surface infiltration where appropriate, and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.** ☒ **Where landscaped areas are used to retain or detain stormwater, specify plants that are tolerant of saturated soil conditions.** ☒ **Consider using pest-resistant plants, especially adjacent to hardscape.** **To insure successful establishment, select plants appropriate to site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.**	☒ **Maintain landscaping using minimum or no pesticides.** ☒ **See applicable operational BMPs in "What you should know for…..Landscape and Gardening"** at http://rcflood.org/stormwater/**Error! Hyperlink reference not valid.** ☒ **Provide IPM information to new owners, lessees and operators.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☐ E. **Pools, spas, ponds, decorative fountains, and other water features.**	☐ **Show location of water feature and a sanitary sewer cleanout in an accessible area within 10 feet. (Exception: Public pools must be plumbed according to County Department of Environmental Health Guidelines.)**	**If the Co-Permittee requires pools to be plumbed to the sanitary sewer, place a note on the plans and state in the narrative that this connection will be made according to local requirements.**	☐ **See applicable operational BMPs in** "Guidelines for Maintaining Your Swimming Pool, Jacuzzi and Garden Fountain" at http://rcflood.org/stormwater/
☐ F. **Food service**	☐ **For restaurants, grocery stores, and other food service operations, show location (indoors or in a covered area outdoors) of a floor sink or other area for cleaning floor mats, containers, and equipment.** ☐ **On the drawing, show a note that this drain will be connected to a grease interceptor before discharging to the sanitary sewer.**	☐ **Describe the location and features of the designated cleaning area.** ☐ **Describe the items to be cleaned in this facility and how it has been sized to insure that the largest items can be accommodated.**	☐ **See the brochure, "**The Food Service Industry Best Management Practices for: Restaurants, Grocery Stores, Delicatessens and Bakeries" at http://rcflood.org/stormwater/ **Provide this brochure to new site owners, lessees, and operators.**
☒ G. **Refuse areas**	☒ **Show where site refuse and recycled materials will be handled and stored for pickup. See local municipal requirements for sizes and other details of refuse areas.** ☒ **If dumpsters or other receptacles are outdoors, show how the designated area will be covered, graded, and paved to prevent run-on and show locations of berms to prevent runoff from the area.** ☒ **Any drains from dumpsters, compactors, and tallow bin areas shall be connected to a grease removal device before discharge to sanitary sewer.**	☒ **State how site refuse will be handled and provide supporting detail to what is shown on plans.** ☒ **State that signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.**	☒ **State how the following will be implemented:** **Provide adequate number of receptacles. Inspect receptacles regularly; repair or replace leaky receptacles. Keep receptacles covered. Prohibit/prevent dumping of liquid or hazardous wastes. Post "no hazardous materials" signs. Inspect and pick up litter daily and clean up spills immediately. Keep spill control materials available on-site. See Fact Sheet SC-34, "Waste Handling and Disposal" in the CASQA Stormwater Quality Handbooks at** www.cabmphandbooks.com

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ H. **Industrial processes.**	☒ **Show process area.**	☒ **If industrial processes are to be located on site, state: "All process activities to be performed indoors. No processes to drain to exterior or to storm drain system."**	☒ **See Fact Sheet SC-10, "Non-Stormwater Discharges" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com** See the brochure "Industrial & Commercial Facilities Best Management Practices for: Industrial, Commercial Facilities" at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ I. **Outdoor storage of equipment or materials. (See rows J and K for source control measures for vehicle cleaning, repair, and maintenance.)**	❑ **Show any outdoor storage areas, including how materials will be covered. Show how areas will be graded and bermed to prevent run-on or run-off from area.** ❑ **Storage of non-hazardous liquids shall be covered by a roof and/or drain to the sanitary sewer system, and be contained by berms, dikes, liners, or vaults.** ❑ **Storage of hazardous materials and wastes must be in compliance with the local hazardous materials ordinance and a Hazardous Materials Management Plan for the site.**	**Include a detailed description of materials to be stored, storage areas, and structural features to prevent pollutants from entering storm drains.** **Where appropriate, reference documentation of compliance with the requirements of Hazardous Materials Programs for:** ▪ **Hazardous Waste Generation** ▪ **Hazardous Materials Release Response and Inventory** ▪ **California Accidental Release (CalARP)** ▪ **Aboveground Storage Tank** ▪ **Uniform Fire Code Article 80 Section 103(b) & (c) 1991** ▪ **Underground Storage Tank** **www.cchealth.org/groups/hazmat/**	❑ **See the Fact Sheets SC-31, "Outdoor Liquid Container Storage" and SC-33, "Outdoor Storage of Raw Materials " in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ J. **Vehicle and Equipment Cleaning**	❑ **Show on drawings as appropriate:** **(1) Commercial/industrial facilities having vehicle/equipment cleaning needs shall either provide a covered, bermed area for washing activities or discourage vehicle/equipment washing by removing hose bibs and installing signs prohibiting such uses.** **(2) Multi-dwelling complexes shall have a paved, bermed, and covered car wash area (unless car washing is prohibited on-site and hoses are provided with an automatic shut-off to discourage such use).** **(3) Washing areas for cars, vehicles, and equipment shall be paved, designed to prevent run-on to or runoff from the area, and plumbed to drain to the sanitary sewer.** **(4) Commercial car wash facilities shall be designed such that no runoff from the facility is discharged to the storm drain system. Wastewater from the facility shall discharge to the sanitary sewer, or a wastewater reclamation system shall be installed.**	❑ **If a car wash area is not provided, describe any measures taken to discourage on-site car washing and explain how these will be enforced.**	**Describe operational measures to implement the following (if applicable):** ❑ **Washwater from vehicle and equipment washing operations shall not be discharged to the storm drain system.** Refer to "Outdoor Cleaning Activities and Professional Mobile Service Providers" for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/ ❑ **Car dealerships and similar may rinse cars with water only.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ K. **Vehicle/Equipment Repair and Maintenance**	❑ **Accommodate all vehicle equipment repair and maintenance indoors. Or designate an outdoor work area and design the area to prevent run-on and runoff of stormwater.** ❑ **Show secondary containment for exterior work areas where motor oil, brake fluid, gasoline, diesel fuel, radiator fluid, acid-containing batteries or other hazardous materials or hazardous wastes are used or stored. Drains shall not be installed within the secondary containment areas.** ❑ **Add a note on the plans that states either (1) there are no floor drains, or (2) floor drains are connected to wastewater pretreatment systems prior to discharge to the sanitary sewer and an industrial waste discharge permit will be obtained.**	❑ **State that no vehicle repair or maintenance will be done outdoors, or else describe the required features of the outdoor work area.** ❑ **State that there are no floor drains or if there are floor drains, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.** ❑ **State that there are no tanks, containers or sinks to be used for parts cleaning or rinsing or, if there are, note the agency from which an industrial waste discharge permit will be obtained and that the design meets that agency's requirements.**	**In the Stormwater Control Plan, note that all of the following restrictions apply to use the site:** ❑ **No person shall dispose of, nor permit the disposal, directly or indirectly of vehicle fluids, hazardous materials, or rinsewater from parts cleaning into storm drains.** ❑ **No vehicle fluid removal shall be performed outside a building, nor on asphalt or ground surfaces, whether inside or outside a building, except in such a manner as to ensure that any spilled fluid will be in an area of secondary containment. Leaking vehicle fluids shall be contained or drained from the vehicle immediately.** ❑ **No person shall leave unattended drip parts or other open containers containing vehicle fluid, unless such containers are in use or in an area of secondary containment.** Refer to "Automotive Maintenance & Car Care Best Management Practices for Auto Body Shops, Auto Repair Shops, Car Dealerships, Gas Stations and Fleet Service Operations". Brochure can be found at http://rcflood.org/stormwater/ Refer to Outdoor Cleaning Activities and Professional Mobile Service Providers for many of the Potential Sources of Runoff Pollutants categories below. Brochure can be found at http://rcflood.org/stormwater/

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
❑ L. **Fuel Dispensing Areas**	❑ **Fueling areas[6] shall have impermeable floors (i.e., portland cement concrete or equivalent smooth impervious surface) that are: a) graded at the minimum slope necessary to prevent ponding; and b) separated from the rest of the site by a grade break that prevents run-on of stormwater to the maximum extent practicable.** ❑ **Fueling areas shall be covered by a canopy that extends a minimum of ten feet in each direction from each pump. [Alternative: The fueling area must be covered and the cover's minimum dimensions must be equal to or greater than the area within the grade break or fuel dispensing area[1].] The canopy [or cover] shall not drain onto the fueling area.**		❑ **The property owner shall dry sweep the fueling area routinely.** ❑ **See the Fact Sheet SD-30 , "Fueling Areas" in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

[6] **The fueling area shall be defined as the area extending a minimum of 6.5 feet from the corner of each fuel dispenser or the length at which the hose and nozzle assembly may be operated plus a minimum of one foot, whichever is greater.**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ M. **Loading Docks**	☒ **Show a preliminary design for the loading dock area, including roofing and drainage. Loading docks shall be covered and/or graded to minimize run-on to and runoff from the loading area. Roof downspouts shall be positioned to direct stormwater away from the loading area. Water from loading dock areas shall be drained to the sanitary sewer, or diverted and collected for ultimate discharge to the sanitary sewer.** ☒ **Loading dock areas draining directly to the sanitary sewer shall be equipped with a spill control valve or equivalent device, which shall be kept closed during periods of operation.** ☒ **Provide a roof overhang over the loading area or install door skirts (cowling) at each bay that enclose the end of the trailer.**		☒ **Move loaded and unloaded items indoors as soon as possible.** ☒ **See Fact Sheet SC-30, "Outdoor Loading and Unloading," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ N. **Fire Sprinkler Test Water**		☒ **Provide a means to drain fire sprinkler test water to the sanitary sewer.**	☒ **See the note in Fact Sheet SC-41, "Building and Grounds Maintenance," in the CASQA Stormwater Quality Handbooks at www.cabmphandbooks.com**
☒ O. **Miscellaneous Drain or Wash Water or Other Sources** ☐ **Boiler drain lines** ☐ **Condensate drain lines** ☐ **Rooftop equipment** ☐ **Drainage sumps** ☐ **Roofing, gutters, and trim.** ☐ **Other sources**		☒ **Boiler drain lines shall be directly or indirectly connected to the sanitary sewer system and may not discharge to the storm drain system.** ☒ **Condensate drain lines may discharge to landscaped areas if the flow is small enough that runoff will not occur. Condensate drain lines may not discharge to the storm drain system.** ☒ **Rooftop equipment with potential to produce pollutants shall be roofed and/or have secondary containment.** ☒ **Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.** ☒ **Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.** **Include controls for other sources as specified by local reviewer.**	

STORMWATER POLLUTANT SOURCES/SOURCE CONTROL CHECKLIST

IF THESE SOURCES WILL BE ON THE PROJECT SITE ...	... THEN YOUR WQMP SHOULD INCLUDE THESE SOURCE CONTROL BMPs, AS APPLICABLE		
1 Potential Sources of Runoff Pollutants	2 Permanent Controls—Show on WQMP Drawings	3 Permanent Controls—List in WQMP Table and Narrative	4 Operational BMPs—Include in WQMP Table and Narrative
☒ P. **Plazas, sidewalks, and parking lots.**			☒ **Sweep plazas, sidewalks, and parking lots regularly to prevent accumulation of litter and debris. Collect debris from pressure washing to prevent entry into the storm drain system. Collect washwater containing any cleaning agent or degreaser and discharge to the sanitary sewer not to a storm drain.**

Appendix 9: O&M

Operation and Maintenance Plan and Documentation of Finance, Maintenance and Recording Mechanisms

RECORDING REQUESTED BY:

CITY OF MENIFEE

AND WHEN RECORDED MAIL TO:

CITY OF MENIFEE
CITY CLERK
29844 HAUN ROAD
MENIFEE, CA 92586-6540

SPACE ABOVE THIS LINE FOR RECORDER'S USE

WATER QUALITY MANAGEMENT PLAN AND STORMWATER BEST MANAGEMENT PRACTICES OPERATION, TRANSFER, MAINTENANCE AND RIGHT OF ENTRY AGREEMENT

PROJECT NAME: _____

PROPERTY OWNER NAME: _____

PROPERTY ADDRESS: _____

_____

APN: _____

THIS AGREEMENT is made and entered into in

_____, California, this_____day of

_____, 201___, by and between

_____, herein after

referred to as "Owner", and the CITY OF MENIFEE, a municipal corporation, located in the County of Riverside, State of California hereinafter referred to as "CITY";

WHEREAS, the City is a Co-Permittee for discharging stormwater from its MS4 facilities pursuant to the Santa Ana Regional Water Quality Control Board Order No. R8-2010-0033, MS4 NPDES Permit No. CAS 618033. Under the terms of the permit the City is required to enforce the provisions of the permit within its jurisdiction. The requirements contained in this agreement are intended to achieve the goals of the MS4 permit;

WHEREAS, the Owner owns real property ("Property) in the City of Menifee, County of Riverside, State of California, more specifically described in Exhibit "A" and depicted in Exhibit "B", each of which exhibits is attached hereto and incorporated herein by this reference;

WHEREAS, at the time of initial approval of development project known as:

_____ within the Property described herein, the City required the project to employ Best Management Practices, hereinafter referred to as "BMPs," to minimize pollutants in urban runoff;

WHEREAS, the Owner has chosen to install and/or implement BMPs as described in the Water Quality Management Plan, on file with the City, hereinafter referred to as "WQMP," to minimize pollutants in urban runoff and to minimize other adverse impacts of urban runoff;

WHEREAS, said WQMP has been certified by the Owner and reviewed and accepted by the City;

WHEREAS, said BMPs, with installation and/or implementation on private property and draining only private property, are part of a private facility with all maintenance or replacement, therefore, the sole responsibility of the Owner in accordance with the terms of this Agreement;

WHEREAS, the Owner is aware that periodic and continuous maintenance, including, but not necessarily limited to, filter material replacement and sediment removal, is required to assure peak performance of all BMPs in the WQMP and that, furthermore, such maintenance activity will require compliance with all Local, State, or Federal laws and regulations, including those pertaining to confined space and waste disposal methods, in effect at the time such maintenance occurs;

NOW THEREFORE, it is mutually stipulated and agreed as follows:

1. Right of Access: Owner hereby provides the City of Menifee designee complete access, of any duration, to the BMPs and their immediate vicinity at any time, upon reasonable notice, or in the event of emergency, as determined by the City's Engineer, no advance notice, for the purpose of inspection, sampling, testing of the Device, and in case of emergency to direct all necessary repairs or other preventative measures at owner's expense in accordance with the procedures set forth in paragraph 3 below. City shall make every effort at all times to minimize or avoid interference with Owner's use of the Property.

2. Responsibility for Operation and Maintenance of BMPs: Owner shall use its best efforts diligently to maintain all BMPs in a manner assuring peak performance at all times. All reasonable precautions shall be exercised by Owner and Owner's representative or contractor in the removal and extraction of any material(s) from the BMPs and the ultimate disposal of the material(s) in a manner consistent with all relevant laws and regulations in effect at the time. As may be requested from time to time by the City, the Owner shall provide the City with documentation identifying the material(s) removed, the quantity, and disposal destination.

3. City Maintenance at Owner's Expense: In the event Owner, or its successors or assigns, fails to accomplish the necessary maintenance contemplated by this

Agreement, the City may cause such maintenance to be conducted on Owner's Property at Owner's expense if Owner does not commence and diligently work to perform the maintenance within five (5) days of receiving written notice from the City, in accordance with paragraph 10 below, of Owner's failure to comply with the terms of this Agreement. The City may charge the entire cost and expense of any maintenance undertaken by the City, whether performed as a response to an emergency situation or following five (5) day written notice by the City, to the Owner or Owner's successors or assigns, including administrative costs, attorney's fees and interest thereon at the maximum rate authorized by the Civil Code from the Date of the notice of expense until paid in full. The City, at its sole election, may take these costs to be a lien upon the property that may be collected at the same time and in the same manner as ordinary municipal taxes as provided in Government Code section 38773.5. Nothing in this section or this Agreement creates an obligation by the City to maintain or repair any BMP, nor does this section prohibit the City from pursuing other legal recourse against Owner.

4. Surety Bond: The City may require the owner to post security in form and for a time period satisfactory to the City to guarantee the performance of the obligations stated herein. Should the Owner fail to perform the obligations under the Agreement, the City may, in the case of a cash bond, act for the Owner using the proceeds from it, or in the case of a surety bond, require the sureties to perform the obligations of the Agreement. As an additional remedy, the City's Engineer may withdraw any previous stormwater-related approval with respect to the property on which BMPs have been installed and/or implemented until such time as Owner repays to City its reasonable costs incurred in accordance with paragraph 3 above.

5. Recording: This agreement shall be recorded in the Office of the Recorder of Riverside County, California, at the expense of the Owner and shall constitute notice to all successors and assigns of the title to said Property of the obligation herein set forth, and also a lien in such amount as will fully reimburse the City, including interest as herein above set forth, subject to foreclosure in event of default in payment.

6. Attorney's Fees: In event of legal action occasioned by any default or action of the Owner, or its successors or assigns, then the Owner and its successors or assigns agree(s) to pay all costs incurred by the City in enforcing the terms of this Agreement, including reasonable attorney's fees and costs, and that the same shall become a part of the lien against said Property.

7. Covenant: It is the intent of the parties hereto that burdens and benefits herein undertaken shall constitute covenants that run with said Property and constitute a lien there against.

8. Binding on Successors: The obligations herein undertaken shall be binding upon the heirs, successors, executors, administrators and assigns of the parties hereto. The term "Owner" shall include not only the present Owner, but also its heirs, successors, executors, administrators, and assigns. Owner shall notify any successor to title of all or part of the Property about the existence of this Agreement. Owner shall provide such notice prior to such successor obtaining an interest in all or part of the Property. Owner shall provide a copy of such notice to the City at the same time such notice is provided to the successor.

9. Time of the Essence: Time is of the essence in the performance of this Agreement.

10. Notice: Any notice to a party required or called for in this Agreement shall be served in person, or by deposit in the U.S. Mail, first class postage prepaid, to the address set forth below. Notice(s) shall be deemed effective upon receipt, or seventy-two (72) hours after deposit in the U.S. Mail, whichever is earlier. A party may change a notice address only by providing written notice thereof to the other party.

IN WITNESS THEREOF, the parties hereto have affixed their signatures as of the date first written above.

IF TO CITY:

City of Menifee

29844 Haun Road

Menifee, CA 92586-6540

IF TO OWNER:

_____

_____

_____

_____

CITY:

By:_____
Armando G. Villa,
City Manager

APPROVED AS TO FORM:

_____
Jeffery T. Melching, City Attorney

ATTEST:

_____
Sarah A. Manwaring, City Clerk

OWNER:

By:_____
NAME

Title:_____

OWNER:

By:_____
NAME

Title:_____

NOTARY ACKNOWLEDGEMENTS ON FOLLOWING PAGE

EXHIBIT A
(Legal Description)

EXHIBIT B
(Map/Illustration)

Maintenance Plan for
Core 5 – Heritage Valley Business Center

Date:_____

Project Address and Cross Streets_____

Assessor's Parcel No.: _____

Property Owner: _____ Phone No.:_____

Designated Contact: _____ Phone No.:_____

Mailing Address:_____

The property contains (one) water quality drainage facility which includes an underground chamber which will be for water storage purposes. The facilities are located as described below and as shown in the attached site plan.

- **StormTech Underground Storage Chamber** is located along Trumble Road in the southwest corner.
- **Contech Bioscape** is located along Trumble Road in the southwest corner.

I. Routine Maintenance Activities

Primary maintenance activities include vegetation management and sediment removal, although mosquito abatement is a concern if the basin is designed to include permanent pools of standing water. Routine maintenance activities, and the frequency at which they will be conducted, are shown in Table 1.

Table 1
Routine Maintenance Activities for Facility Areas

No.	Maintenance Task	Frequency of Task
1	Remove obstructions, debris and trash from facility areas and dispose of properly.	Monthly, or as needed after storm events
2	Inspect facility areas to ensure that it drains between storms and within five days after rainfall.	Monthly, or as needed after storm events
3	Inspect inlets for channels, soil exposure or other evidence of erosion. Clear obstructions and remove sediment.	Monthly, or as needed after storm events
4	Remove and replace all dead and diseased vegetation.	Twice a year
5	Maintain vegetation and the irrigation system. Prune and weed to keep facility areas neat and orderly in appearance.	Before wet season begins, or as needed
6	Check that mulch in bioscape is at appropriate depth (3 inches per soil specifications) and replenish as necessary before wet season begins.	Monthly
7	Inspect facility areas using the attached inspection checklist.	Monthly, or after large storm events, and after removal of accumulated debris or material

II. Prohibitions

The use of pesticides and quick release fertilizers shall be minimized, and the principles of integrated pest management (IPM) followed:

1. Employ non-chemical controls (biological, physical and cultural controls) before using chemicals to treat a pest problem.
2. Prune plants properly and at the appropriate time of year.
3. Provide adequate irrigation for landscape plants. Do not over water.
4. Limit fertilizer use unless soil testing indicates a deficiency. Slow-release or organic fertilizer is preferable. Check with municipality for specific requirements.
5. Pest control should avoid harming non-target organisms, or negatively affecting air and water quality and public health. Apply chemical controls only when monitoring indicates that preventative and non-chemical methods are not keeping pests below acceptable levels. When pesticides are required, apply the least toxic and the least persistent pesticide that will provide adequate pest control. Do not apply pesticides on a prescheduled basis.
6. Sweep up spilled fertilizer and pesticides. Do not wash away or bury such spills.
7. Do not over apply pesticide. Spray only where the infestation exists. Follow the manufacturer's instructions for mixing and applying materials.
8. Only licensed, trained pesticide applicators shall apply pesticides.
9. Apply pesticides at the appropriate time to maximize their effectiveness and minimize the likelihood of discharging pesticides into runoff. With the exception of pre-emergent pesticides, avoid application if rain is expected.
10. Unwanted/unused pesticides shall be disposed as hazardous waste.

Standing water shall not remain in the treatment and/or hydromodification management measures for more than 3 days, to prevent mosquito generation. Should any mosquito issues arise, contact the applicable vector control department as needed for assistance (see below). Mosquito larvicides shall be applied only when absolutely necessary, as indicated by the applicable vector control contact, and then only by a licensed professional or contractor.

III. Vector Control Contacts

Northwest Riverside County
Northwest Mosquito & Vector Control District
951.340.9792

Riverside County
Vector Control at Riverside County Environmental Health
951.766.9454

IV. Inspections

The attached Bio-Retention Basin Inspection and Maintenance Checklist shall be used to conduct inspections monthly (or as needed), identify needed maintenance, and record maintenance that is conducted.

Basin, Lift Station, and Bioscape Facility Areas
(proprietary instructions for Bioscape added after this checklist)
Inspection and Maintenance Checklist

Property Address: _____ Property Owner: _____

Treatment Measure No.: _____ Date of Inspection: _____ Type of Inspection: □ Monthly □ Pre-Wet Season
□ After heavy runoff □ End of Wet Season

Inspector(s): _____ □ Other:_____

Defect	**Conditions When Maintenance Is Needed**	**Maintenance Needed? (Y/N)**	**Comments** (Describe maintenance completed and if needed maintenance was not conducted, note when it will be done)	**Results Expected When Maintenance Is Performed**
1. Standing Water	When water stands in the facility areas between storms and does not drain within five days after rainfall.			There should be no areas of standing water once inflow has ceased. Any of the following may apply: sediment or trash blockages removed from facility areas, improved grade from head to foot of bioscape area, or replaced underdrains.
2. Trash and Debris Accumulation	Trash and debris accumulated in the facility areas.			Trash and debris removed from facility areas and disposed of properly.
3. Sediment	Evidence of sedimentation in facility areas.			Material removed so that there is no clogging or blockage. Material is disposed of properly.
4. Erosion	Channels have formed around inlets, there are areas of bare soil, and/or other evidence of erosion.			Obstructions and sediment removed so that water flows freely and disperses over a wide area. Obstructions and sediment are disposed of properly.
5. Vegetation	Vegetation is dead, diseased and/or overgrown.			Vegetation is healthy and attractive in appearance.
6. Mulch	Mulch is missing or patchy in appearance. Areas of bare earth are exposed, or mulch layer is less than 3 inches in depth.			All bare earth is covered, except mulch is kept 6 inches away from trunks of trees and shrubs. Mulch is even in appearance, at a depth of 3 inches.
7. Miscellaneous	Any condition not covered above that needs attention for the areas to function as designed.			Meet the design specifications.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

BMP TRAINING ACKNOWLEDGEMENT FORM

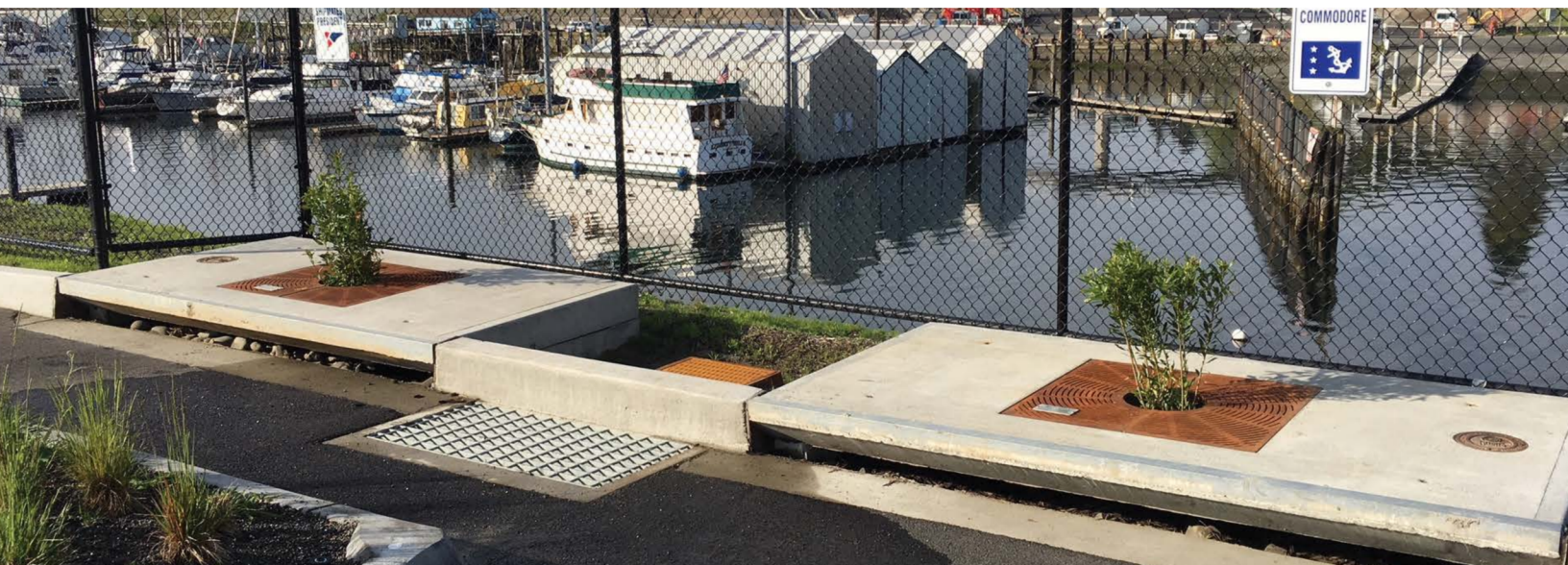
By signing this form, the undersigned certifies that he/she has received the listed materials and training for the BMP's that he or she is responsible for operation and maintenance or responsible to meet the requirements. The undersigned also acknowledged that punitive actions may be imposed if he or she fails to comply. The punitive actions can be in terms of monetary fine or termination of the contract or the rights that is transferred to the undersigned through contracts. If necessary, the owner or public agencies may complete the corrective actions and billed the undersigned.

Name (Print): _____
Business Name:_____
Title/Position: _____
Signature: _____ Date: _____

Item	Training Description	Related BMP(s)	Handout Materials	Initials	Comments

CONTECH®
ENGINEERED SOLUTIONS

Filterra®
High Performance Bioretention



The experts you need to solve your stormwater challenges



Contech is the leader in stormwater solutions, helping engineers, contractors and owners with infrastructure and land development projects throughout North America.

With our responsive team of stormwater experts, local regulatory expertise and flexible solutions, Contech is the trusted partner you can count on for stormwater management solutions.

Your Contech Team



STORMWATER CONSULTANT

It's my job to recommend the best solution to meet permitting requirements.



STORMWATER DESIGN ENGINEER

I work with consultants to design the best approved solution to meet your project's needs.



REGULATORY MANAGER

I understand the local stormwater regulations and what solutions will be approved.



SALES ENGINEER

I make sure our solutions meet the needs of the contractor during construction.

Contech is your partner in stormwater management solutions



Low Impact Development in a Small Footprint – Filterra®

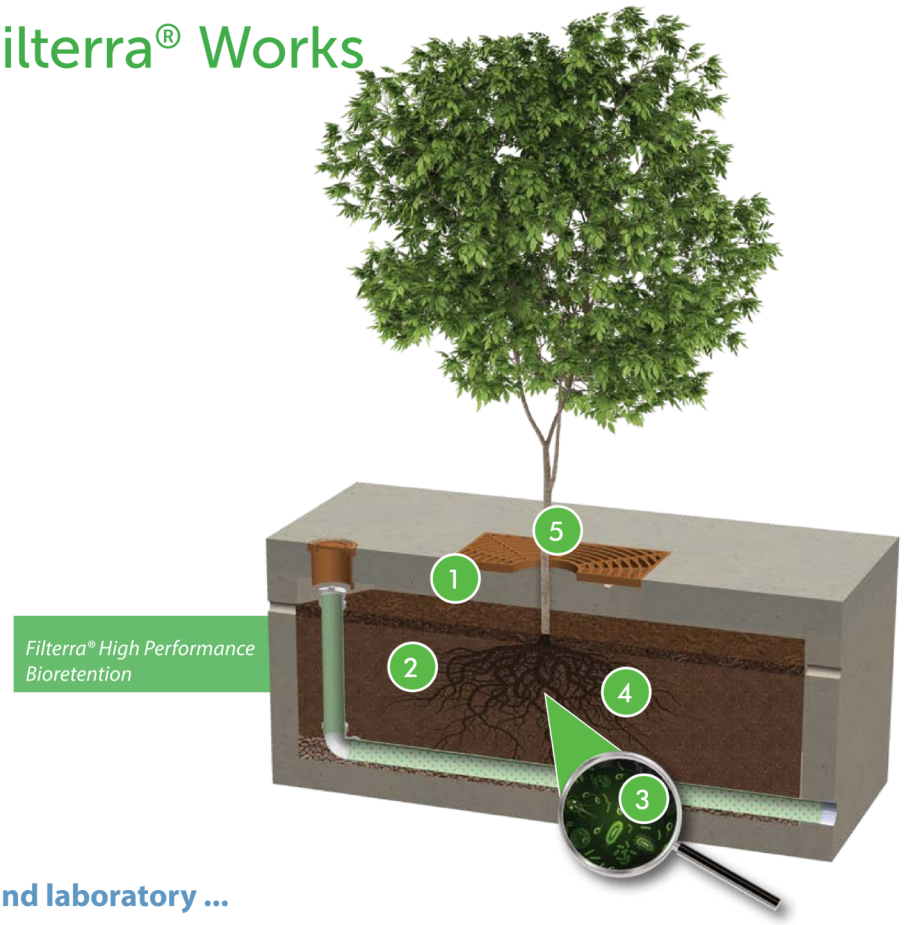
Filterra is an engineered high-performance bioretention system. While it operates similar to traditional bioretention, its high flow media allows for a reduction in footprint of up to 95% versus traditional bioretention practices. Filterra provides a Low Impact Development (LID) solution for tight, highly developed sites such as urban development projects, commercial parking lots, residential streets, and streetscapes. Its small footprint also reduces installation and life cycle costs versus traditional bioretention. Filterra can be configured in many different ways to enhance site aesthetics, integrate with other LID practices, or increase runoff reduction through infiltration below or downstream of the system.

At the Manchester Stormwater Park seen above, the Filterra systems surrounding the central courtyard allowed for the creation of a community space with parking, sidewalks, and benches in a quaint downtown area. A traditional bioretention system treating the same drainage area would have occupied the entire park area leaving no room for these amenities.

filterra® Bioretention Systems

filterra® Bioscape®

How the Filterra® Works



Tested in the field and laboratory ...

1. Stormwater enters the Filterra through a pipe, curb inlet, or sheet flow and ponds over the pretreatment mulch layer, capturing heavy sediment and debris. Organics and microorganisms within the mulch trap and degrade metals and hydrocarbons. The mulch also provides water retention for the system's vegetation.

2. Stormwater flows through engineered Filterra media which filters fine pollutants and nutrients. Organic material in the media removes dissolved metals and acts as a food source for root-zone microorganisms. Treated water exits through an underdrain pipe or infiltrates (if designed accordingly).

3. Rootzone microorganisms digest and transform pollutants into forms easily absorbed by plants.

4. Plant roots absorb stormwater and pollutants that were transformed by microorganisms, regenerating the media's pollutant removal capacity. The roots grow, provide a hospitable environment for the rootzone microorganisms and penetrate the media, maintaining hydraulic conductivity.

5. The plant trunk and foliage utilize nutrients such as Nitrogen and Phosphorus for plant health, sequester heavy metals into the biomass, and provide evapotranspiration of residual water within the system.

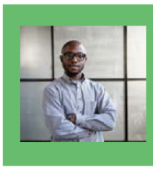


Plants and organic material are vital to the long term performance of bioretention systems

Using nature to facilitate Stormwater Management

Filterra® Features and Benefits

FEATURE	BENEFITS
High biofiltration media flow rate (up to 175"/hr+)	Greatly reduced footprint versus traditional bioretention and LID solutions
Filterra system is packaged, including all components necessary for system performance	Quality control for easy, fast and successful installation
Quick and easy maintenance	Low lifecycle costs
Variety of configurations and aesthetic options	Integrates easily into any site or landscape plan
Natural stormwater management processes featuring organics and vegetation	Meets Low Impact Development requirements and ensures long-term performance



The Filterra system can be configured with many different aesthetic options

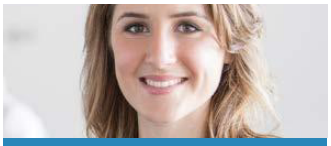
Select Filterra® Approvals

Filterra is approved through numerous local, state and federal verification programs, including:

- New Jersey Department of Environmental Protection (NJ DEP)
- Washington Department of Ecology (GULD) – Basic, Enhanced, Phosphorus, and Oil
- Maryland Department of the Environment - Environmental Site Design (ESD)
- Texas Commission on Environmental Quality (TCEQ)
- Virginia Department of Environmental Quality (VA DEQ)
- Maine Department of Environmental Protection (ME DEP)
- Atlanta, GA Regional Commission
- Los Angeles County, CA - Alternate to Attachment H
- City of Portland, Oregon Bureau of Environmental Services
- North Carolina Department of Environmental Quality (NC DEQ)

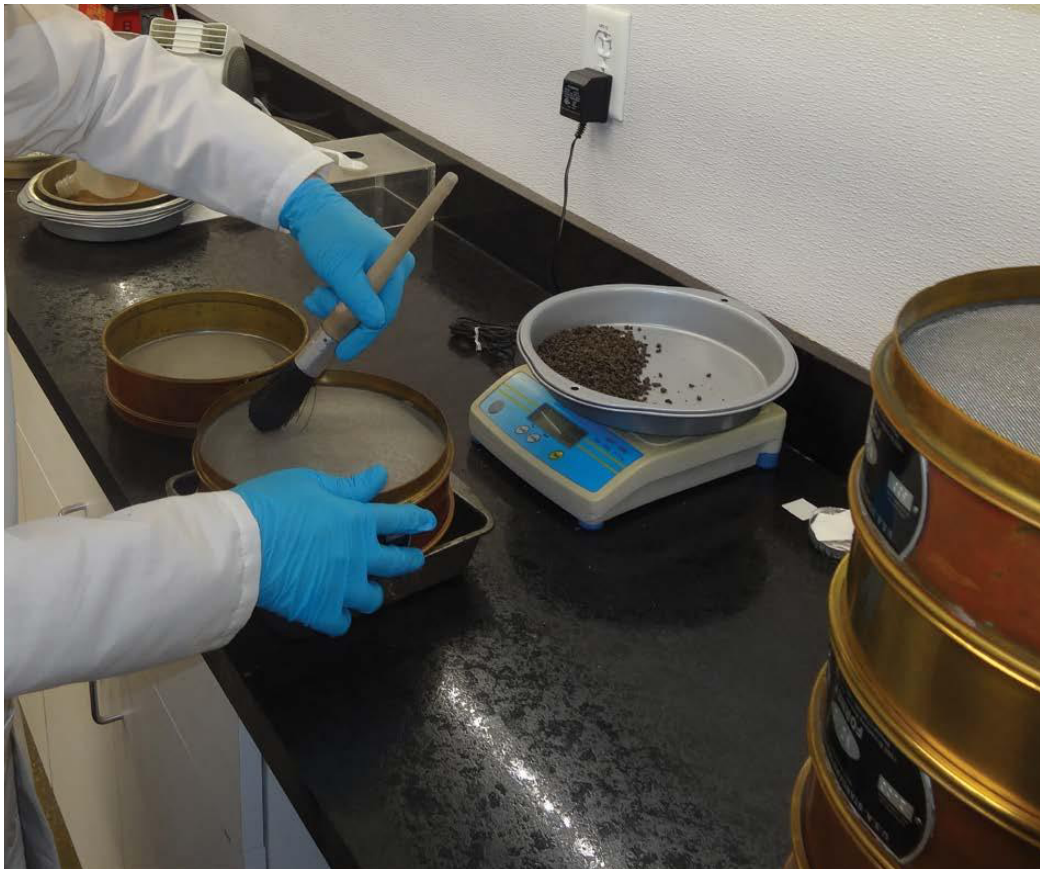


Filterra® Performance Testing Results



APPLICATION TIPS

- The Filterra system has been tested under industry standard protocols and has proven its pollutant removal performance and system longevity.
- Contech invests significant resources in media blending calibration and product testing to ensure our media meets our strict performance specifications every time.
- Keep regulators and owners happy by selecting a product with predictable and proven maintenance longevity.



POLLUTANT OF CONCERN	MEDIAN REMOVAL EFFICIENCY	MEDIAN EFFLUENT CONCENTRATION (MG/L)
Total Suspended Solids (TSS)	86%	3.3
Total Phosphorus - TAPE (TP)	70%	0.05
Total Nitrogen (TN)	34%	0.54
Total Copper (TCu)	55%	0.004
Total Dissolved Copper	43%	0.003
Total Zinc (TZn)	56%	0.04
Total Dissolved Zinc	54%	0.1
Total Zinc (TZn)	56%	0.04
Total Petroleum Hydrocarbons	87%	0.71

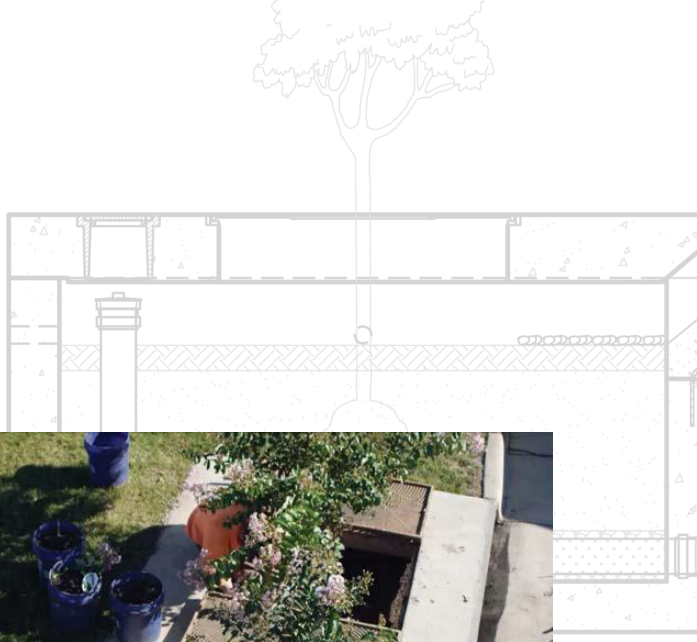
Each batch of Filterra® media has been extensively tested to ensure consistent performance every time.

Sources:
UVA (TARP) Field Study - 2006
Herrera (TAPE) Study - 2009
Herrera (TAPE) Study - 2014
NC State Study - 2015

Note: Some jurisdictions recognize higher removal rates. Contact your Contech Stormwater Consultant for performance expectations.

Field tested and performance verified

Filterra® Maintenance



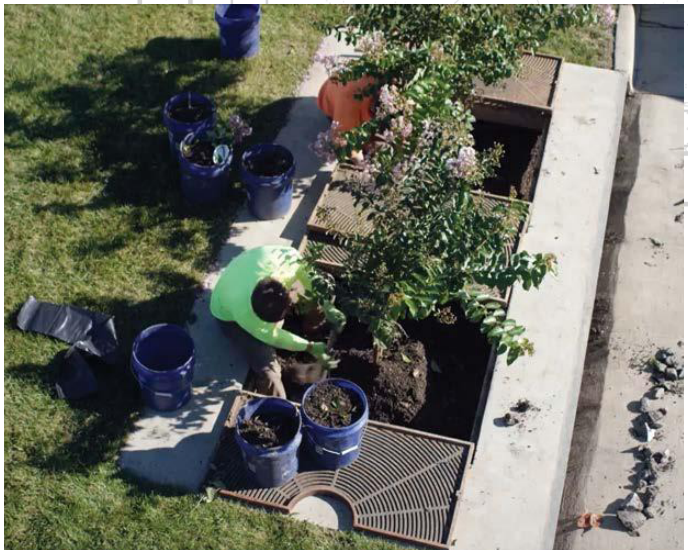
Activation and first year of maintenance is included with every system.*

With proper routine maintenance, the engineered media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation.* This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation.

Maintenance is low-cost, low-tech and simple:

- Remove trash, sediment, and mulch
- Replace with a fresh 3" layer of mulch
- No confined space entry or special tools
- Easily performed by landscape contractor or facilities maintenance provider

** Some exclusions may apply.*



Filterra offers high performance bioretention for advanced pollutant removal with easy maintenance.



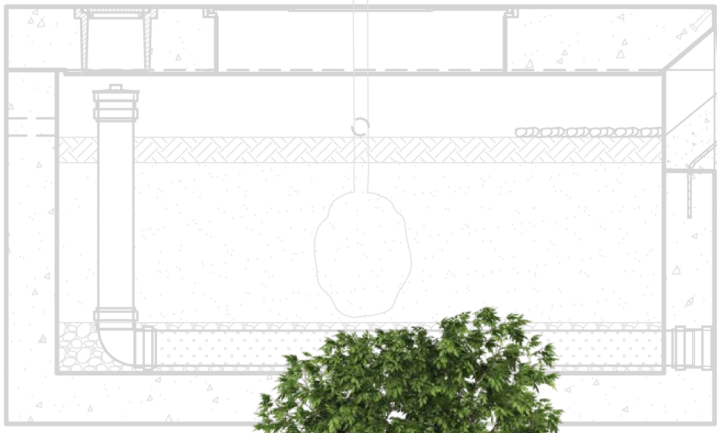
Plant health evaluation and pruning is important to encourage growth.

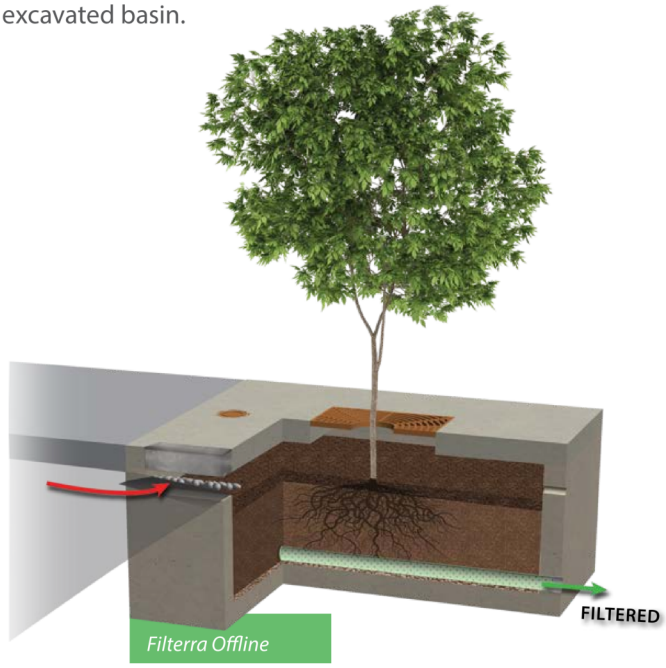
All stormwater treatment systems require maintenance for effective operation.

Filterra® Configurations

Multiple system configurations integrate with site hydraulic design and layout ...

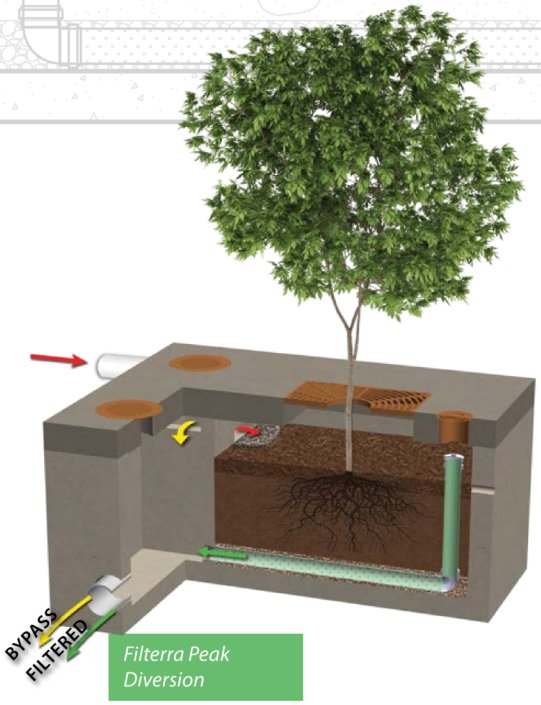
The Filterra is available in a variety of precast configurations as well as Filterra Bioscape, which can be installed directly into an excavated basin.



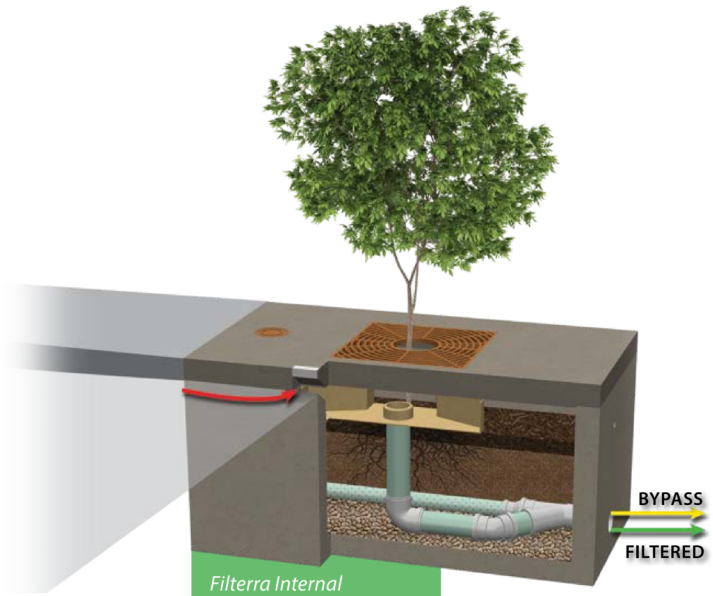


Filterra Offline

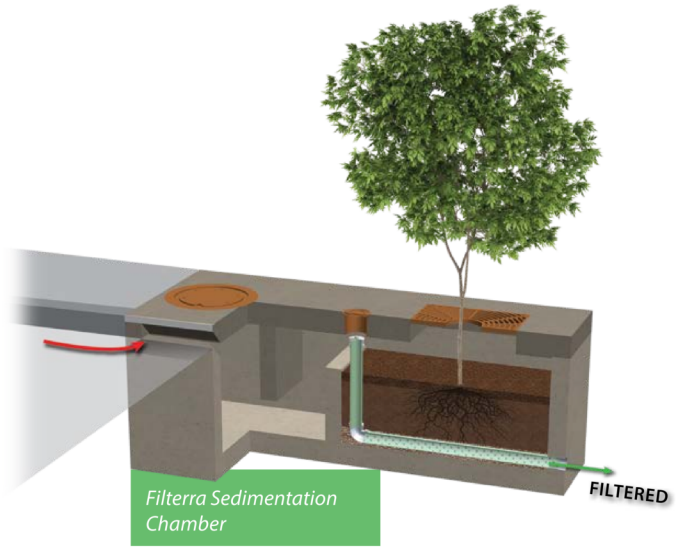
Bypass via downstream catch basin.



Filterra Peak Diversion



Filterra Internal Bypass Curb



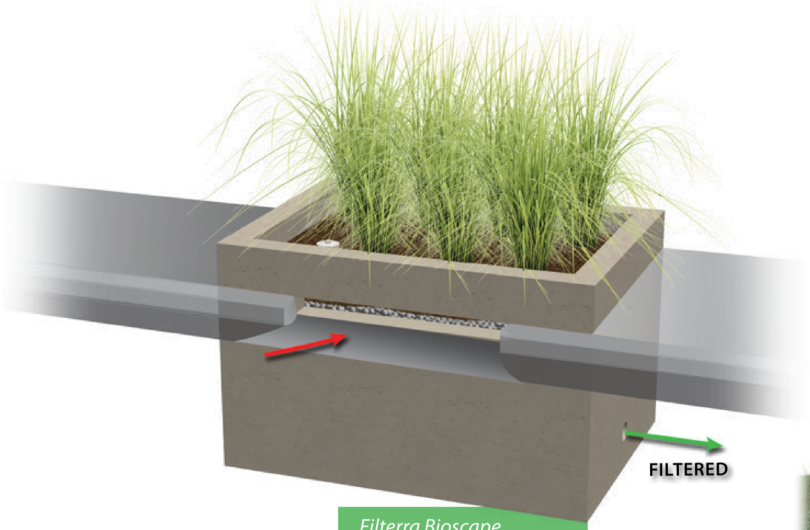
Filterra Sedimentation Chamber

Bypass via downstream catch basin.

**Additional configurations available, including offline - pipe, peak diversion - grate, and internal bypass curb-chamber.*

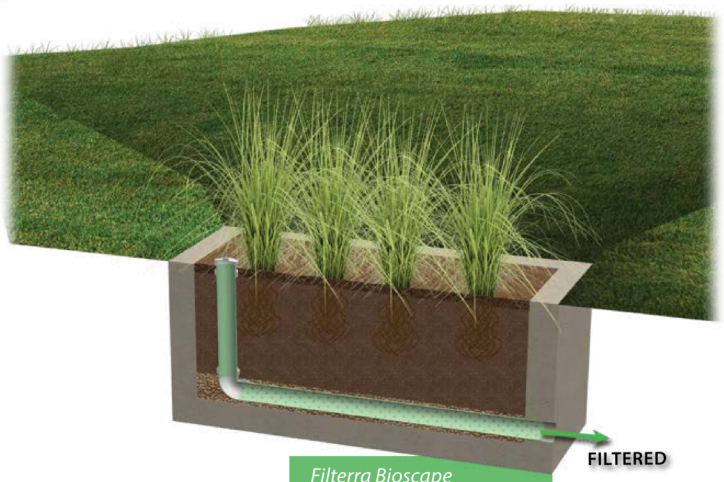
Multiple configurations allow for easy site integration

Filterra® Bioscape® Configurations



Filterra Bioscape Vault Offline

Bypass via downstream catch basin.



Filterra Bioscape Vault Basin

Bypass via upstream structure. Multiple inlet options.



Filterra Bioscape

Bypass via upstream structure. Multiple inlet options.

**Additional configurations available, including bioscape vault offline pipe.*

Filterra® Aesthetic Options

Multiple aesthetic options to enhance the appearance and integrate with landscaping ...



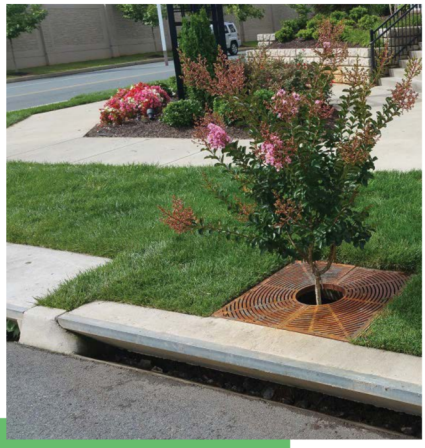
Standard Tree Grate



Custom/Decorative Tree Grate



Full Grate with Grasses



Recessed Top Slab



Open Top Planter - Filterra Bioscape



Street Tree

An aesthetic solution to meet your bioretention needs

Filterra® Bioscape®







Large-scale Filterra that can be customized to your site ...

- Ideal for Filterra systems greater than 300 square feet
- Design with or without containment structure
- Incorporate infiltration directly below the system, where required
- Combine with upstream storage or downstream infiltration
- Use as an alternative to larger regional traditional bioretention systems
- Easily add pretreatment Hydrodynamic Separator for large-scale or heavy pollutant loading applications



A partner you can rely on



STORMWATER SOLUTIONS

PIPE SOLUTIONS

STRUCTURES SOLUTIONS

Few companies offer the wide range of high-quality stormwater resources you can find with us — state-of-the-art products, decades of expertise, and all the maintenance support you need to operate your system cost-effectively.

THE CONTECH WAY

Contech® Engineered Solutions provides innovative, cost-effective site solutions to engineers, contractors, and developers on projects across North America. Our portfolio includes bridges, drainage, erosion control, retaining wall, sanitary sewer and stormwater management products.

TAKE THE NEXT STEP

For more information: www.ContechES.com

NOTHING IN THIS CATALOG SHOULD BE CONSTRUED AS A WARRANTY. APPLICATIONS SUGGESTED HEREIN ARE DESCRIBED ONLY TO HELP READERS MAKE THEIR OWN EVALUATIONS AND DECISIONS, AND ARE NEITHER GUARANTEES NOR WARRANTIES OF SUITABILITY FOR ANY APPLICATION. CONTECH MAKES NO WARRANTY WHATSOEVER, EXPRESS OR IMPLIED, RELATED TO THE APPLICATIONS, MATERIALS, COATINGS, OR PRODUCTS DISCUSSED HEREIN. ALL IMPLIED WARRANTIES OF MERCHANTABILITY AND ALL IMPLIED WARRANTIES OF FITNESS FOR ANY PARTICULAR PURPOSE ARE DISCLAIMED BY CONTECH. SEE CONTECH'S CONDITIONS OF SALE (AVAILABLE AT WWW.CONTECHES.COM/COS) FOR MORE INFORMATION.

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Filterra Owner's Manual



filterra®

Bioretention Systems

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Bioretention Systems

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Enclosed

Local Area Filterra Plant List

CONTECH®
ENGINEERED SOLUTIONS

Introduction

Thank you for your purchase of the Filterra® Bioretention System. Filterra is a specially engineered stormwater treatment system incorporating high performance biofiltration media to remove pollutants from stormwater runoff. The system's biota (vegetation and soil microorganisms) then further breakdown and absorb captured pollutants. All components of the system work together to provide a sustainable long-term solution for treating stormwater runoff.

The Filterra system has been delivered to you with protection in place to resist intrusion of construction related sediment which can contaminate the biofiltration media and result in inadequate system performance. These protection devices are intended as a best practice and cannot fully prevent contamination. It is the purchaser's responsibility to provide adequate measures to prevent construction related runoff from entering the Filterra system.

Included with your purchase is Activation of the Filterra system by the manufacturer as well as a 1-year warranty from delivery of the system and 1-year of routine maintenance (mulch replacement, debris removal, and pruning of vegetation) up to twice during the first year after activation.

Design and Installation

Each project presents different scopes for the use of Filterra systems. Information and help may be provided to the design engineer during the planning process. Correct Filterra box sizing (by rainfall region) is essential to predict pollutant removal rates for a given area. The engineer shall submit calculations for approval by the local jurisdiction. The contractor is responsible for the correct installation of Filterra units as shown in approved plans. A comprehensive installation manual is available at www.ContechES.com.

Activation Overview

Activation of the Filterra system is a procedure completed by the manufacturer to place the system into working condition. This involves the following items:

- Removal of construction runoff protection devices
- Planting of the system's vegetation
- Placement of pretreatment mulch layer using mulch certified for use in Filterra systems.

Activation MUST be provided by the manufacturer to ensure proper site conditions are met for Activation, proper installation of the vegetation, and use of pretreatment mulch certified for use in Filterra systems.



Minimum Requirements

The minimum requirements for Filterra Activation are as follows:

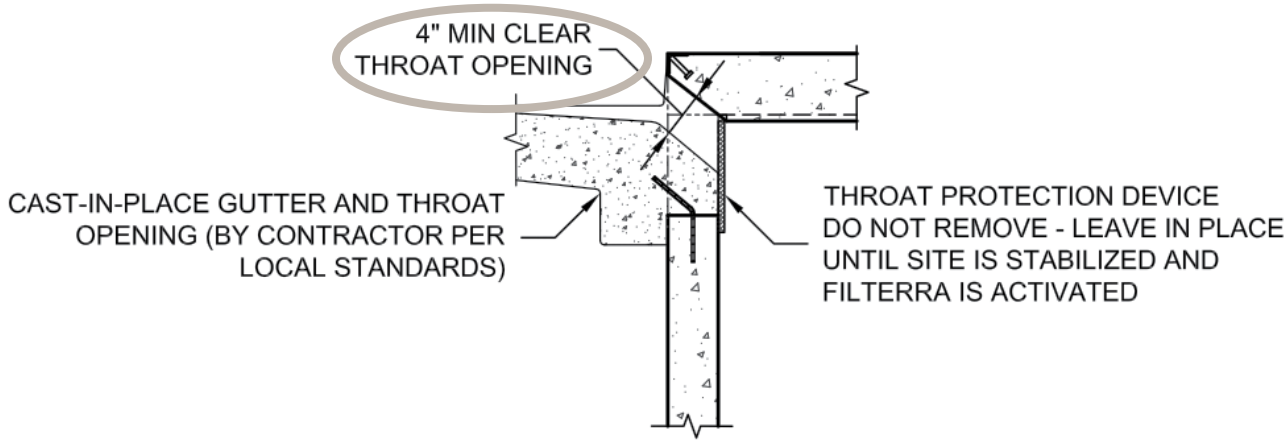
1. The site landscaping must be fully stabilized, i.e. full landscaping installed and some grass cover (not just straw and seed) is required to reduce sediment transport. Construction debris and materials should be removed from surrounding area.



2. Final paving must be completed. Final paving ensures that paving materials will not enter and contaminate the Filterra system during the paving process, and that the plant will receive runoff from the drainage area, assisting with plant survival for the Filterra system.



3. Filterra throat opening should be at least 4" in order to ensure adequate capacity for inflow and debris.



An Activation Checklist is included on page 12 to ensure proper conditions are met for Contech to perform the Activation services. A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation.

Filterra Plant Selection Overview

A Plant List has been enclosed with this packet highlighting recommended plants for Filterra systems in your area. Keep in mind that plants are subject to availability due to seasonality and required minimum size for the Filterra system. Plants installed in the Filterra system are container plants (max 15 gallon) from nursery stock and will be immature in height and spread at Activation.

It is the responsibility of the owner to provide adequate irrigation when necessary to the plant of the Filterra system.

The "Planting Requirements for Filterra Systems" document is included as an appendix and discusses proper selection and care of the plants within Filterra systems.

Warranty Overview

Refer to the Contech Engineered Solutions LLC Stormwater Treatment System LIMITED WARRANTY for further information. The following conditions may void the Filterra system's warranty and waive the manufacturer provided Activation and Maintenance services:

- Unauthorized activation or performance of any of the items listed in the activation overview
- Any tampering, modifications or damage to the Filterra system or runoff protection devices
- Removal of any Filterra system components
- Failure to prevent construction related runoff from entering the Filterra system
- Failure to properly store and protect any Filterra components (including media and underdrain stone) that may be shipped separately from the vault

Routine Maintenance Guidelines

With proper routine maintenance, the biofiltration media within the Filterra system should last as long as traditional bioretention media. Routine maintenance is included by the manufacturer on all Filterra systems for the first year after activation. This includes a maximum of 2 visits to remove debris, replace pretreatment mulch, and prune the vegetation. More information is provided in the Operations and Maintenance Guidelines. Some Filterra systems also contain pretreatment or outlet bays. Depending on site pollutant loading, these bays may require periodic removal of debris, however this is not included in the first year of maintenance, and would likely not be required within the first year of operation.

These services, as well as routine maintenance outside of the included first year, can be provided by certified maintenance providers listed on the Contech website. Training can also be provided to other stormwater maintenance or landscape providers.



Why Maintain?

All stormwater treatment systems require maintenance for effective operation. This necessity is often incorporated in your property's permitting process as a legally binding BMP maintenance agreement. Other reasons to maintain are:

- Avoiding legal challenges from your jurisdiction's maintenance enforcement program.
- Prolonging the expected lifespan of your Filterra media.
- Avoiding more costly media replacement.
- Helping reduce pollutant loads leaving your property.

Simple maintenance of the Filterra is required to continue effective pollutant removal from stormwater runoff before discharge into downstream waters. This procedure will also extend the longevity of the living biofilter system. The unit will recycle and accumulate pollutants within the biomass, but is also subjected to other materials entering the inlet. This may include trash, silt and leaves etc. which will be contained above the mulch layer. Too much silt may inhibit the Filterra's flow rate, which is the reason for site stabilization before activation. Regular replacement of the mulch stops accumulation of such sediment.

When to Maintain?

Contech includes a 1-year maintenance plan with each system purchase. Annual included maintenance consists of a maximum of two (2) scheduled visits. Additional maintenance may be necessary depending on sediment and trash loading (by Owner or at additional cost). The start of the maintenance plan begins when the system is activated.

Maintenance visits are scheduled seasonally; the spring visit aims to clean up after winter loads including salts and sands while the fall visit helps the system by removing excessive leaf litter.

It has been found that in regions which receive between 30-50 inches of annual rainfall, (2) two visits are generally required; regions with less rainfall often only require (1) one visit per annum. Varying land uses can affect maintenance frequency; e.g. some fast food restaurants require more frequent trash removal. Contributing drainage areas which are subject to new development wherein the recommended erosion and sediment control measures have not been implemented may require additional maintenance visits.

Some sites may be subjected to extreme sediment or trash loads, requiring more frequent maintenance visits. This is the reason for detailed notes of maintenance actions per unit, helping the Supplier and Owner predict future maintenance frequencies, reflecting individual site conditions.

Owners must promptly notify the (maintenance) Supplier of any damage to the plant(s), which constitute(s) an integral part of the bioretention technology. Owners should also advise other landscape or maintenance contractors to leave all maintenance to the Supplier (i.e. no pruning or fertilizing) during the first year.



Exclusion of Services

Clean up due to major contamination such as oils, chemicals, toxic spills, etc. will result in additional costs and are not covered under the Supplier maintenance contract. Should a major contamination event occur the Owner must block off the outlet pipe of the Filterra (where the cleaned runoff drains to, such as drop inlet) and block off the throat of the Filterra. The Supplier should be informed immediately.

Maintenance Visit Summary

Each maintenance visit consists of the following simple tasks (detailed instructions below).

1. Inspection of Filterra and surrounding area
2. Removal of tree grate and erosion control stones
3. Removal of debris, trash and mulch
4. Mulch replacement
5. Plant health evaluation and pruning or replacement as necessary
6. Clean area around Filterra
7. Complete paperwork

Maintenance Tools, Safety Equipment and Supplies

Ideal tools include: camera, bucket, shovel, broom, pruners, hoe/rake, and tape measure. Appropriate Personal Protective Equipment (PPE) should be used in accordance with local or company procedures. This may include impervious gloves where the type of trash is unknown, high visibility clothing and barricades when working in close proximity to traffic and also safety hats and shoes. A T-Bar or crowbar should be used for moving the tree grates (up to 170 lbs ea.). Most visits require minor trash removal and a full replacement of mulch. See below for actual number of bagged mulch that is required in each media bay size. Mulch should be a double shredded, hardwood variety. Some visits may require additional Filterra engineered soil media available from the Supplier.

Box Length	Box Width	Filter Surface Area (ft^2)	Volume at 3" (ft^3)	# of 2 ft^3 Mulch Bags
4	4	16	4	2
6	4	24	6	3
8	4	32	8	4
6	6	36	9	5
8	6	48	12	6
10	6	60	15	8
12	6	72	18	9
13	7	91	23	12

Maintenance Visit Procedure

Keep sufficient documentation of maintenance actions to predict location specific maintenance frequencies and needs. An example Maintenance Report is included in this manual.



1. Inspection of Filterra and surrounding area

- Record individual unit before maintenance with photograph (numbered). Record on Maintenance Report (see example in this document) the following:

Record on Maintenance Report the following:

Standing Water	yes | no
Damage to Box Structure	yes | no
Damage to Grate	yes | no
Is Bypass Clear	yes | no

If yes answered to any of these observations, record with close-up photograph (numbered).



2. Removal of tree grate and erosion control stones

- Remove cast iron grates for access into Filterra box.
- Dig out silt (if any) and mulch and remove trash & foreign items.

3. Removal of debris, trash and mulch

Record on Maintenance Report the following:

Silt/Clay	yes | no
Cups/ Bags	yes | no
Leaves	yes | no
Buckets Removed	_____



- After removal of mulch and debris, measure distance from the top of the Filterra engineered media soil to the top of the top slab. Compare the measured distance to the distance shown on the approved Contract Drawings for the system. Add Filterra media (not top soil or other) to bring media up as needed to distance indicated on drawings.

Record on Maintenance Report the following:

Distance to Top of Top Slab (inches)	_____
Inches of Media Added	_____



4. Mulch replacement

- Add double shredded mulch evenly across the entire unit to a depth of 3".
- Refer to Filterra Mulch Specifications for information on acceptable sources.
- Ensure correct repositioning of erosion control stones by the Filterra inlet to allow for entry of trash during a storm event.
- Replace Filterra grates correctly using appropriate lifting or moving tools, taking care not to damage the plant.



5. Plant health evaluation and pruning or replacement as necessary

- Examine the plant's health and replace if necessary.
- Prune as necessary to encourage growth in the correct directions

Record on Maintenance Report the following:

Height above Grate	_____ (ft)
Width at Widest Point	_____ (ft)
Health	healthy | unhealthy
Damage to Plant	yes | no
Plant Replaced	yes | no



6. Clean area around Filterra

- Clean area around unit and remove all refuse to be disposed of appropriately.



7. Complete paperwork

- Deliver Maintenance Report and photographs to appropriate location (normally Contech during maintenance contract period).
- Some jurisdictions may require submission of maintenance reports in accordance with approvals. It is the responsibility of the Owner to comply with local regulations.

Maintenance Checklist

Drainage System Failure	Problem	Conditions to Check	Condition that Should Exist	Actions
Inlet	Excessive sediment or trash accumulation.	Accumulated sediments or trash impair free flow of water into Filterra.	Inlet should be free of obstructions allowing free distributed flow of water into Filterra.	Sediments and/or trash should be removed.
Mulch Cover	Trash and floatable debris accumulation.	Excessive trash and/or debris accumulation.	Minimal trash or other debris on mulch cover.	Trash and debris should be removed and mulch cover raked level. Ensure bark nugget mulch is not used.
Mulch Cover	"Ponding" of water on mulch cover.	"Ponding" in unit could be indicative of clogging due to excessive fine sediment accumulation or spill of petroleum oils.	Stormwater should drain freely and evenly through mulch cover.	Recommend contact manufacturer and replace mulch as a minimum.
Vegetation	Plants not growing or in poor condition.	Soil/mulch too wet, evidence of spill. Incorrect plant selection. Pest infestation. Vandalism to plants.	Plants should be healthy and pest free.	Contact manufacturer for advice.
Vegetation	Plant growth excessive.	Plants should be appropriate to the species and location of Filterra.		Trim/prune plants in accordance with typical landscaping and safety needs.
Structure	Structure has visible cracks.	Cracks wider than 1/2 inch or evidence of soil particles entering the structure through the cracks.		Vault should be repaired.
Maintenance is ideally to be performed twice annually.				

Filterra Inspection & Maintenance Log

Filterra System Size/Model:_____ **Location:** _____

Date	Mulch & Debris Removed	Depth of Mulch Added	Mulch Brand	Height of Vegetation Above Grate	Vegetation Species	Issues with System	Comments
1/1/17	*5 – 5 gal Buckets*	*3″*	*Lowe's Premium Brown Mulch*	*4′*	*Galaxy Magnolia*	*- Standing water in downstream structure*	*- Removed blockage in downstream structure*

Appendix 1 – Filterra® Activation Checklist

Project Name: _____ Company: _____

Site Contact Name: _____ Site Contact Phone/Email: _____

Site Owner/End User Name: _____ Site Owner/End User Phone/Email: _____

Preferred Activation Date: _____ (provide 2 weeks minimum from date this form is submitted)

Site Designation	System Size	Final Pavement / Top Coat Complete	Landscaping Complete / Grass Emerging	Construction materials / Piles / Debris Removed	Throat Opening Measures 4" Min. Height	Plant Species Requested
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	
		☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	☐ Yes ☐ No	

Attach additional sheets as necessary.

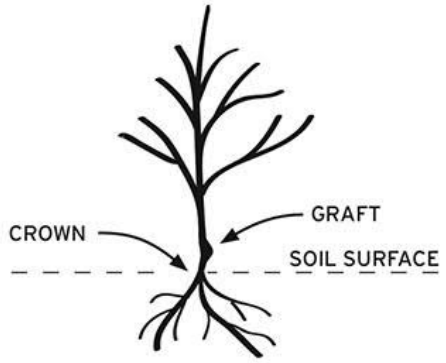
NOTE: A charge of $500.00 will be invoiced for each Activation visit requested by Customer where Contech determines that the site does not meet the conditions required for Activation. ONLY Contech authorized representatives can perform Activation of Filterra systems; unauthorized Activations will void the system warranty and waive manufacturer supplied Activation and 1st Year Maintenance.

_____ _____

Signature Date

Appendix 2 – Planting Requirements for Filterra® Systems

Plant Material Selection



- Select plant(s) as specified in the engineering plans and specifications.
- Select plant(s) with full root development but not to the point where root bound.
- Use local nursery container plants only. Ball and burlapped plants are not permitted.
- For precast Filterra systems with a tree grate, plant(s) must not have scaffold limbs at least 14 inches from the crown due to spacing between the top of the mulch and the tree grate. Lower branches can be pruned away provided there are sufficient scaffold branches for tree or shrub development.
- For precast Filterra systems with a tree grate, at the time of installation, it is required that plant(s) must be at least 6" above the tree grate opening at installation for all Filterra configurations. This DOES NOT apply to Full Grate Cover designs.
- Plant(s) shall not have a mature height greater than 25 feet.
- For standard 21" media depth, a 7 – 15 gallon container size shall be used. Media less than 21" (Filterra boxes only) will require smaller container plants.
- For precast Filterra systems, plant(s) should have a single trunk at installation, and pruning may be necessary at activation and maintenance for some of the faster growing species, or species known to produce basal sprouts.

Plant Installation

- During transport protect the plant leaves from wind and excessive jostling.
- Prior to removing the plant(s) from the container, ensure the soil moisture is sufficient to maintain the integrity of the root ball. If needed, pre-wet the container plant.
- Cut away any roots which are growing out of the container drain holes. Plants with excessive root growth from the drain holes should be rejected.
- Plant(s) should be carefully removed from the pot by gently pounding on the sides of the container with the fist to loosen root ball. Then carefully slide out. Do not lift plant(s) by trunk as this can break roots and cause soil to fall off. Extract the root ball in a horizontal position and support it to prevent it from breaking apart. Alternatively the pot can be cut away to minimize root ball disturbance.
- Remove any excess soil from above the root flare after removing plant(s) from container.
- Excavate a hole with a diameter 4" greater than the root ball, gently place the plant(s).
- If plant(s) have any circling roots from being pot bound, gently tease them loose without breaking them.
- If root ball has a root mat on the bottom, it should be shaved off with a knife just above the mat line.
- Plant the tree/shrub/grass with the top of the root ball 1" above surrounding media to allow for settling.
- All plants should have the main stem centered in the tree grate (where applicable) upon completion of installation.
- With all trees/shrubs, remove dead, diseased, crossed/rubbing, sharply crotched branches or branches growing excessively long or in wrong direction compared to majority of branches.
- To prevent transplant shock (especially if planting takes place in the hot season), it may be necessary to prune some of the foliage to compensate for reduced root uptake capacity. This is accomplished by pruning away some of the smaller secondary branches or a main scaffold branch if there are too many. Too much foliage relative to the root ball can dehydrate and damage the plant.
- Plant staking may be required.

Mulch Installation

- Only mulch that has been meeting Contech Engineered Solutions' mulch specifications can be used in the Filterra system.
- Mulch must be applied to a depth of 3" evenly over the surface of the media.

Irrigation Requirements

- Each Filterra system must receive adequate irrigation to ensure survival of the living system during periods of drier weather.
- Irrigation sources include rainfall runoff from downspouts and/or gutter flow, applied water through the tree grate or in some cases from an irrigation system with emitters installed during construction.
- At Activation: Apply about one (cool climates) to two (warm climates) gallons of water per inch of trunk diameter over the root ball.
- During Establishment: In common with all plants, each Filterra plant will require more frequent watering during the establishment period. One inch of applied water per week for the first three months is recommended for cooler climates (2 to 3 inches for warmer climates). If the system is receiving rainfall runoff from the drainage area, then irrigation may not be needed. Inspection of the soil moisture content can be evaluated by gently brushing aside the mulch layer and feeling the soil. Be sure to replace the mulch when the assessment is complete. Irrigate as needed**.
- Established Plants: Established plants have fully developed root systems and can access the entire water column in the media. Therefore irrigation is less frequent but requires more applied water when performed. For a mature system assume 3.5 inches of available water within the media matrix. Irrigation demand can be estimated as 1" of irrigation demand per week. Therefore if dry periods exceed 3 weeks, irrigation may be required. It is also important to recognize that plants which are exposed to windy areas and reflected heat from paved surfaces may need more frequent irrigation. Long term care should develop a history which is more site specific.

** Five gallons per square yard approximates 1 inch of water Therefore for a 6' by 6' Filterra approximately 20-60 gallons of water is needed. To ensure even distribution of water it needs to be evenly sprinkled over the entire surface of the filter bed, with special attention to make sure the root ball is completely wetted. NOTE: if needed, measure the time it takes to fill a five gallon bucket to estimate the applied water flow rate then calculate the time needed to irrigate the Filterra. For example, if the flow rate of the sprinkler is 5 gallons/minute then it would take 12 minutes to irrigate a 6' by 6' filter.



Notes

filterra®
Bioretention Systems

CONTECH®
ENGINEERED SOLUTIONS

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West Chester, OH 45069
info@conteches.com | 800-338-1122
www.ContechES.com

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For Information:

Local Sewering Agencies in Riverside County:

City of Beaumont	(909) 769-8520
Belair Homeowners Association	(909) 277-1414
City of Banning	(909) 922-3130
City of Blythe	(760) 922-6161
City of Coachella	(760) 391-5008
Coachella Valley Water District	(760) 398-2651
City of Corona	(909) 736-2259
Desert Center, CSA #51	(760) 227-3203
Eastern Municipal Water District	(909) 928-3777
Elsinore Valley MWD	(909) 674-3146
Farm Mutual Water Company	(909) 244-4198
Idyllwild Water District	(909) 659-2143
Jurupa Community Services Dist.	(909) 685-7434
Lake Hemet MWD	(909) 658-3241
Lee Lake Water District	(909) 277-1414
March Air Force Base	(909) 656-7000
Mission Springs Water District	(760) 329-6448
City of Palm Springs	(760) 323-8242
Rancho Caballero	(909) 780-9272
Rancho California Water Dist.	(909) 676-4101
Ripley, CSA #62	(760) 922-4909
Rubidoux Community Services Dist.	(909) 684-7580
City of Riverside	(909) 782-5341
Silent Valley Club, Inc	(909) 849-4501
Valley Sanitary District	(760) 347-2356
Western Municipal Water District	(909) 780-4170

Spill Response Agency:
Haz-Mat: (909) 358-5055
Hazardous Waste Disposal: (909) 358-5055
To Report Illegal Dumping or a Clogged Storm Drain: 1-800-506-2555

StormWater CleanWater
PROTECTION PROGRAM

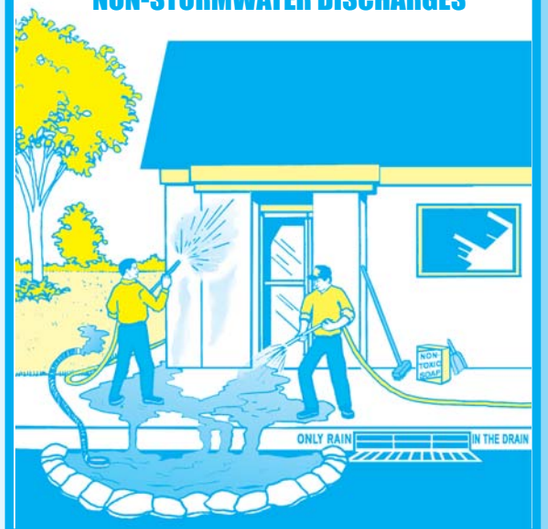
Riverside County gratefully acknowledges the Bay Area Stormwater Management Agencies Association and the Cleaning Equipment Trade Association for information provided in this brochure.

StormWater Pollution

What you should know for...

OUTDOOR CLEANING ACTIVITIES

NON-STORMWATER DISCHARGES



GUIDELINES for disposal of washwater from:

- Sidewalk, plaza or parking lot cleaning
- Vehicle washing or detailing
- Building exterior cleaning
- Waterproofing
- Equipment cleaning or degreasing

Do you know . . . where the water should go?



Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to prevent flooding by carrying excess rainwater away from streets. . . it's not designed to be a waste disposal system. Since the storm drain system does not provide for water treatment, it often serves the unintended function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.

Non-stormwater discharges such as washwater generated from outdoor cleaning projects often transport harmful pollutants into storm drains and our local waterways. Polluted runoff contaminates local waterways and poses a threat to groundwater resources.

Soaps, degreasers, automotive fluids, litter, and a host of other materials washed off buildings, sidewalks, plazas, parking areas, vehicles, and equipment can all pollute our waterways.

The Cities and County of Riverside StormWater/CleanWater Protection Program

Since preventing pollution is much easier, and less costly than cleaning up "after the fact," the Cities and County of Riverside StormWater/CleanWater Protection Program informs residents and businesses of pollution prevention activities such as those described in this pamphlet.

The Cities and County of Riverside have adopted ordinances for stormwater management and discharge control. In accordance with state and federal law, these local stormwater ordinances **prohibit** the discharge of wastes into the storm drain system or local surface waters. This includes non-stormwater discharges containing oil, grease, detergents, degreasers, trash, or other waste materials.



PLEASE NOTE: The discharge of pollutants into the street, gutters, storm drain system, or waterways - without a Regional Water Quality Control Board permit or waiver - is ***strictly prohibited*** by local ordinances and state and federal law.

Help Protect Our Waterways!

Use These Guidelines For Outdoor Cleaning Activities and Washwater Disposal

DO . . . Dispose of **small amounts** of **washwater from cleaning building exteriors, sidewalks, or plazas** onto landscaped or unpaved surfaces provided you have the owner's permission and the discharge will not cause flooding or nuisance problems, or flow into a storm drain.

DO NOT . . . Discharge **large amounts** of these types of washwater onto landscaped areas or soil where water may run to a street or storm drain. Wastewater from exterior cleaning may be pumped to a sewer line with specific permission from the local sewering agency.

DO . . . Check with your local sewering agency's policies and requirements concerning waste water disposal. **Water from many outdoor cleaning activities** may be acceptable for disposal to the sewer system. See the list on the back of this flyer for phone numbers of the sewering agencies in your area.

DO NOT . . . Pour **hazardous wastes** or toxic materials into the storm drain or sewer system . . . properly dispose of it instead. When in doubt, contact the local sewering agency! The agency will tell you what types of liquid wastes can be accepted.

DO . . . Understand that **water (without soap) used to remove dust from clean vehicles** may be discharged to a street or storm drain. **Washwater from sidewalk, plaza, and building surface cleaning** may go into a street or storm drain if ALL of the following conditions are met:

1) The surface being washed is free of residual oil stains, debris and similar pollutants by using dry cleanup methods (sweeping, and cleaning any oil or chemical spills with rags or other absorbent materials before using water).
2) Washing is done with water only - no soap or other cleaning materials.
3) You have not used the water to remove paint from surfaces during cleaning.

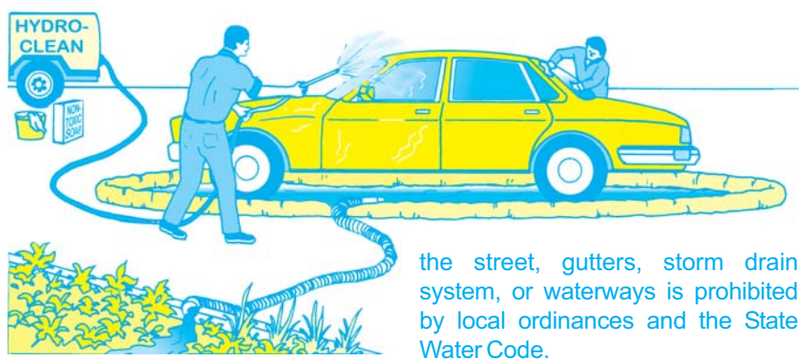
DO NOT . . . Dispose of water containing **soap or any other type of cleaning agent** into a storm drain or water body. This is a direct violation of state and/or local regulations. Because **wastewater from cleaning parking areas or roadways** normally contains metallic brake pad dust, oil and other automotive fluids, it should never be discharged to a street, gutter, or storm drain.

DO . . . Understand that **mobile auto detailers** should divert washwater to landscaped or dirt areas. Note: Be aware that soapy washwater may adversely affect landscaping; consult with the property owner. Residual washwater may remain on paved surfaces to evaporate; sweep up any remaining residue. If there is sufficient water volume to reach the storm drain, collect the runoff and obtain permission to pump it into the sanitary sewer. Follow local sewering agency's requirements for disposal.

DO NOT . . . Dispose of left over cleaning agents into the gutter, storm drain or sanitary sewer.

Regarding Cleaning Agents:

If you must use soap, use biodegradable/phosphate free cleaners. Avoid use of petroleum based cleaning products. Although the use of nontoxic cleaning products is strongly encouraged, ***do*** understand that these products can still degrade water quality and, therefore, the discharge of these products into



the street, gutters, storm drain system, or waterways is prohibited by local ordinances and the State Water Code.

Note: When cleaning surfaces with a high pressure washer or steam cleaning methods, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning, as compared to the use of a low pressure hose, can remove additional materials that can contaminate local waterways.

Other Tips to Help Protect Our Water . . .

Screening Wash Water

A thorough dry cleanup before washing (without soap) surfaces such as building exteriors and decks without loose paint, sidewalks, or plaza areas, *should be sufficient to protect storm drains.* **However**, if any debris (solids) could enter storm drains or remain in the gutter or street after cleaning, washwater should first pass through a "20 mesh" or finer screen to catch the solid material, which should then be disposed of in the trash.

Drain Inlet Protection/ Containing & Collecting Wash Water

- Sand bags can be used to create a barrier around storm drain inlets.
- Plugs or rubber mats can be used to temporarily seal storm drain openings.
- You can also use vacuum booms, containment pads, or temporary berms to keep wash water away from the street, gutter, or storm drain.

Equipment and Supplies

Special materials such as absorbents, storm drain plugs and seals, small sump pumps, and vacuum booms are available from many vendors. For more information check catalogs such as New Pig (800-468-4647), Lab Safety Supply (800-356-0783), C&H (800-558-9966), and W.W. Grainger (800-994-9174); or call the Cleaning Equipment Trade Association (800-441-0111) or the Power Washers of North America (800-393-PWNA).

Helpful telephone numbers and links:

Riverside County Stormwater Protection Partners

Flood Control District	(951) 955-1200
County of Riverside	(951) 955-1000
City of Banning	(951) 922-3105
City of Beaumont	(951) 769-8520
City of Calimesa	(909) 795-9801
City of Canyon Lake	(951) 244-2955
Cathedral City	(760) 770-0327
City of Coachella	(760) 398-4978
City of Corona	(951) 736-2447
City of Desert Hot Springs	(760) 329-6411
City of Eastvale	(951) 361-0900
City of Hemet	(951) 765-2300
City of Indian Wells	(760) 346-2489
City of Indio	(760) 391-4000
City of Lake Elsinore	(951) 674-3124
City of La Quinta	(760) 777-7000
City of Menifee	(951) 672-6777
City of Moreno Valley	(951) 413-3000
City of Murrieta	(951) 304-2489
City of Norco	(951) 270-5607
City of Palm Desert	(760) 346-0611
City of Palm Springs	(760) 323-8299
City of Perris	(951) 943-6100
City of Rancho Mirage	(760) 324-4511
City of Riverside	(951) 361-0900
City of San Jacinto	(951) 654-7337
City of Temecula	(951) 694-6444
City of Wildomar	(951) 677-7751

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555 or e-mail us at
fcnpdes@rcflood.org

- Riverside County Flood Control and Water Conservation District
  www.rcflood.org

Online resources include:

- California Storm Water Quality Association
  www.casqa.org
- State Water Resources Control Board
  www.waterboards.ca.gov
- Power Washers of North America
  www.thepwna.org

Stormwater Pollution

What you should know for...

Outdoor Cleaning Activities and Professional Mobile Service Providers



Storm drain pollution prevention information for:

- Car Washing / Mobile Detailers
- Window and Carpet Cleaners
- Power Washers
- Waterproofers / Street Sweepers
- Equipment cleaners or degreasers and all mobile service providers

Do you know where street flows actually go?

Storm drains are NOT connected to sanitary sewer systems and treatment plants!



The primary purpose of storm drains is to carry *rain* water away from developed areas to prevent flooding. Pollutants discharged to storm drains are transported directly into rivers, lakes and streams. Soaps, degreasers, automotive fluids, litter and a host of materials are washed off buildings, sidewalks, plazas and parking areas. Vehicles and equipment must be properly managed to prevent the pollution of local waterways.

Unintentional spills by mobile service operators can flow into storm drains and pollute our waterways. **Avoid mishaps.** *Always* have a **Spill Response Kit** on hand to clean up unintentional spills. Only emergency **Mechanical** repairs should be done in City streets, using drip pans for spills. **Plumbing** should be done on private property. Always store chemicals in a leak-proof container and keep covered when not in use. **Window/Power Washing** waste water shouldn't be released into the streets, but should be disposed of in a sanitary sewer, landscaped area or in the soil. Soiled **Carpet Cleaning** wash water should be filtered before being discharged into the sanitary sewer. Dispose of all filter debris properly. **Car Washing/Detailing** operators should wash cars on private property and use a regulated hose nozzle for water flow control and runoff prevention. Capture and dispose of waste water and chemicals properly. Remember, storm drains are for receiving rain water runoff only.

REPORT ILLEGAL STORM DRAIN DISPOSAL
1-800-506-2555



Help Protect Our Waterways!

Use these guidelines for Outdoor Cleaning Activities and Wash Water Disposal

Did you know that disposing of pollutants into the street, gutter, storm drain or body of water is *PROHIBITED* by law and can result in stiff penalties?

Best Management Practices

Waste wash water from Mechanics, Plumbers, Window/Power Washers, Carpet Cleaners, Car Washing and Mobile Detailing activities may contain significant quantities of motor oil, grease, chemicals, dirt, detergents, brake pad dust, litter and other materials.

Best Management Practices, or BMPs as they are known, are guides to prevent pollutants from entering the storm drains. ***Each of us*** can do our part to keep stormwater clean by using the suggested BMPs below:

Simple solutions for both light and heavy duty jobs:

Do...consider dry cleaning methods first such as a mop, broom, rag or wire brush. Always keep a spill response kit on site.

Do...prepare the work area before power cleaning by using sand bags, rubber mats, vacuum booms, containment pads or temporary berms to keep wash water away from the gutters and storm drains.

Do...use vacuums or other machines to remove and collect loose debris or litter before applying water.

Do...obtain the property owner's permission to dispose of ***small amounts*** of power washing waste water on to landscaped, gravel or unpaved surfaces.

Do...check your local sanitary sewer agency's policies on wash water disposal regulations before disposing of wash water into the sewer. (See list on reverse side)

Do...be aware that if discharging to landscape areas, soapy wash water may damage landscaping. Residual wash water may remain on paved surfaces to evaporate. Sweep up solid residuals and dispose of properly. Vacuum booms are another option for capturing and collecting wash water.

Do...check to see if local ordinances prevent certain activities.

Do not let...wash or waste water from sidewalk, plaza or building cleaning go into a street or storm drain.



Report illegal storm drain disposal
Call Toll Free
1-800-506-2555

Using Cleaning Agents

Try using biodegradable/phosphate-free products. They are easier on the environment, but don't confuse them with being toxic free. Soapy water entering the storm drain system can impact the delicate aquatic environment.



When cleaning surfaces with a ***high-pressure washer*** or ***steam cleaner***, additional precautions should be taken to prevent the discharge of pollutants into the storm drain system. These two methods of surface cleaning can loosen additional material that can contaminate local waterways.

Think Water Conservation

Minimize water use by using high pressure, low volume nozzles. Be sure to check all hoses for leaks. Water is a precious resource, don't let it flow freely and be sure to shut it off in between uses.

Screening Wash Water

Conduct thorough dry cleanup before washing exterior surfaces, such as buildings and decks ***with loose paint***, sidewalks or plaza areas. Keep debris from entering the storm drain after cleaning by first passing the wash water through a "20 mesh" or finer screen to catch the solid materials, then dispose of the mesh in a refuse container. Do not let the remaining wash water enter a street, gutter or storm drain.

Drain Inlet Protection & Collection of Wash Water

- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment on grassy or gravel areas so that the wash water can seep into the ground.
- Pump or vacuum up all wash water in the contained area.

Concrete/Coring/Saw Cutting and Drilling Projects

Protect any down-gradient inlets by using dry activity techniques whenever possible. If water is used, minimize the amount of water used during the coring/drilling or saw cutting process. Place a barrier of sandbags and/or absorbent berms to protect the storm drain inlet or watercourse. Use a shovel or wet vacuum to remove the residue from the pavement. Do not wash residue or particulate matter into a storm drain inlet or watercourse.

For Information:

For more information on the General Industrial Storm Water Permit contact:

State Water Resources Control Board (SWRCB)
(916) 657-1146 or www.swrcb.ca.gov/ or, at your Regional Water Quality Control Board (RWQCB).

Santa Ana Region (8)
California Tower
3737 Main Street, Ste. 500
Riverside, CA 92501-3339
(909) 782-4130

San Diego Region (9)
9771 Clairemont Mesa Blvd., Ste. A
San Diego, CA 92124
(619) 467-2952

Colorado River Basin Region (7)
73-720 Fred Waring Dr., Ste. 100
Palm Desert, CA 92260
(760) 346-7491

SPILL RESPONSE AGENCY:
HAZ-MAT: (909) 358-5055
HAZARDOUS WASTE DISPOSAL: (909) 358-5055
RECYCLING INFORMATION: 1-800-366-SAVE
TO REPORT ILLEGAL DUMPING OR A CLOGGED STORM DRAIN: 1-800-506-2555

To order additional brochures or to obtain information on other pollution prevention activities, call:
(909) 955-1111.

StormWater
CleanWater
PROTECTION PROGRAM

Riverside County gratefully acknowledges the State Water Quality Control Board and the American Public Works Association, Storm Water Quality Task Force for the information provided in this brochure.

DID YOU KNOW . . .

YOUR FACILITY MAY NEED A STORM WATER PERMIT?



Many industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit

FIND OUT
IF YOUR FACILITY MUST OBTAIN A PERMIT

StormWater Pollution . . . What you should know

Riverside County has two drainage systems - sanitary sewers and storm drains. The storm drain system is designed to help prevent flooding by carrying excess rainwater away from streets. Since the storm drain system does not provide for water treatment, it also serves the *unintended* function of transporting pollutants directly to our waterways.

Unlike sanitary sewers, storm drains are not connected to a treatment plant - they flow directly to our local streams, rivers and lakes.



In recent years, awareness of the need to protect water quality has increased. As a result, federal, state, and local programs have been established to reduce polluted stormwater discharges to our waterways. The emphasis of these programs is to prevent stormwater pollution since it's much easier, and less costly, than cleaning up "after the fact."

National Pollutant Discharge Elimination System (NPDES)

In 1987, the Federal Clean Water Act was amended to establish a framework for regulating industrial stormwater discharges under the NPDES permit program. In California, NPDES permits are issued by the State Water Resources Control Board (SWRCB) and the nine (9) Regional Water Quality Control Boards (RWQCB). In general, certain industrial facilities and manufacturing operations must obtain coverage under the Industrial Activities Storm Water General Permit if the type of facilities or operations falls into one of the several categories described in this brochure.

How Do I Know If I Need A Permit?

Following are ***general descriptions*** of the industry categories types that are regulated by the Industrial Activities Storm Water General Permit. Contact your local Region Water Quality Control Board to determine if your facility/operation requires coverage under the Permit.

➜ Facilities such as cement manufacturing; feedlots; fertilizer manufacturing; petroleum refining; phosphate manufacturing; steam electric power generation; coal mining; mineral mining and processing; ore mining and dressing; and asphalt emulsion;

➜ Facilities classified as lumber and wood products (except wood kitchen cabinets); pulp, paper, and paperboard mills; chemical producers (except some pharmaceutical and biological products); petroleum and coal products; leather production and products; stone, clay and glass products; primary metal industries; fabricated structural metal; ship and boat building and repairing;

➜ Active or inactive mining operations and oil and gas exploration, production, processing, or treatment operations;

➜ Hazardous waste treatment, storage, or disposal facilities;

➜ Landfills, land application sites and open dumps that receive or have received any industrial waste; unless there is a new overlying land use such as a golf course, park, etc., and there is no discharge associated with the landfill;

➜ Facilities involved in the recycling of materials, including metal scrap yards, battery reclaimers, salvage yards, and automobile junkyards;

➜ Steam electric power generating facilities, facilities that generate steam for electric power by combustion;

➜ Transportation facilities that have vehicle maintenance shops, fueling facilities, equipment cleaning operations, or airport deicing operations. This includes school bus maintenance facilities operated by a school district;

➜ Sewage treatment facilities;

➜ Facilities that have areas where material handling equipment or activities, raw materials, intermediate products, final products, waste materials, by-products, or industrial machinery are exposed to storm water.

How do I obtain coverage under the Industrial Activities Storm Water General Permit?

Obtain a permit application package from your local Regional Water Quality Control Board listed on the back of this brochure or the State Water Resources Control Board (SWRCB). Submit a completed Notice of Intent (NOI) form, site map and the appropriate fee ($250 or $500) to the SWRCB. Facilities must submit an NOI thirty (30) days prior to beginning operation. Once you submit the NOI, the State Board will send you a letter acknowledging receipt of your NOI and will assign your facility a waste discharge identification number (WDID No.). You will also receive an annual fee billing. These billings should roughly coincide with the date the State Board processed your original NOI submittal.

What are the requirements of the Industrial Activities Storm Water General Permit?

The basic requirements of the Permit are:

1. The facility must eliminate any non-stormwater discharges or obtain a separate permit for such discharges.

2. The facility must develop and implement a Storm Water Pollution Prevention Plan (SWPPP). The SWPPP must identify sources of pollutants that may be exposed to stormwater. Once the sources of pollutants have been identified, the facility operator must develop and implement Best Management Practices (BMPs) to minimize or prevent polluted runoff.

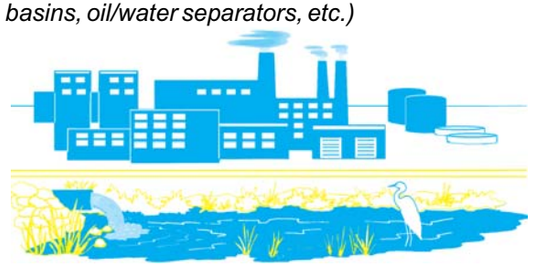
   Guidance in preparing a SWPPP is available from a document prepared by the California Storm Water Quality Task Force called the California Storm Water Best Management Practice Handbook.

3. The facility must develop and implement a Monitoring Program that includes conducting visual observations and collecting samples of the facility's storm water discharges associated with industrial activity. The General Permit requires that the analysis be conducted by a laboratory that is certified by the State of California.

4. The facility must submit to the Regional Board, every July 1, an annual report that includes the results of its monitoring program.

A Non-Storm Water Discharge is... *any discharge to a storm drain system that is not composed entirely of storm water. The following non-storm water discharges are authorized by the General Permit: fire hydrant flushing; potable water sources, including potable water related to the operation, maintenance, or testing of potable water systems; drinking fountain water; atmospheric condensates including refrigeration, air conditioning, and compressor condensate; irrigation drainage; landscape watering; springs; non-contaminated ground water; foundation or footing drainage; and sea water infiltration where the sea waters are discharged back into the sea water source.*

A BMP is . . . *a technique, process, activity, or structure used to reduce the pollutant content of a storm water discharge. BMPs may include simple, non-structural methods such as good housekeeping, staff training and preventive maintenance. Additionally, BMPs may include structural modifications such as the installation of berms, canopies or treatment control (e.g. setting basins, oil/water separators, etc.)*



WARNING*: There are significant penalties for non-compliance: a minimum fine of $5,000 for failing to obtain permit coverage, and, up to $10,000 per day, per violation plus $10 per gallon of discharge in excess of 1,000 gallons.*

Stormwater Pollution

What you should know for...

Industrial & Commercial Facilities

Best Management Practices (BMPS) for:

- Industrial Facilities
- Commercial Facilities



Riverside County Stormwater Program Members

City of Banning
(951) 922-3105

City of Beaumont
(951) 769-8520

City of Calimesa
(909) 795-9801

City of Canyon Lake
(951) 244-2955

City of Cathedral City
(760) 770-0340

City of Coachella
(760) 398-3502

City of Corona
(951) 736-2447

City of Desert Hot Springs
(760) 329-6411

City of Eastvale
(951) 361-0900

City of Hemet
(951) 765-2300

City of Indian Wells
(760) 346-2489

City of Indio
(760) 391-4000

City of Jurupa Valley
(951) 332-6464

City of Lake Elsinore
(951) 674-3124

City of La Quinta
(760) 777-7000

City of Menifee
(951) 672-6777

City of Moreno Valley
(951) 413-3000

City of Murrieta
(951) 304-2489

City of Norco
(951) 270-5607

City of Palm Desert
(760) 346-0611

City of Palm Springs
(760) 323-8299

City of Perris
(951) 943-6100

City of Rancho Mirage
(760) 324-4511

City of Riverside
(951) 826-5311

City of San Jacinto
(951) 487-7330

City of Temecula
(951) 694-6444

City of Wildomar
(951) 677-7751

Coachella Valley Water District
(760) 398-2651

County of Riverside
(951) 955-1000

Riverside County Flood Control District
(951) 955-1200

YOU can prevent Stormwater Pollution following these practices...

Industrial and Commercial Facilities

The Riverside County Stormwater Program has identified a number of Best Management Practices (BMPs) for Industrial and Commercial Facilities. These BMPs control and reduce stormwater pollutants from reaching our storm drain system and ultimately our local water bodies. City and County ordinances require businesses to use these BMPs to protect our water quality. Local cities and the County are required to verify implementation of these BMPs by performing regular facility inspections.

Prohibited Discharges

Discontinue all non-stormwater discharges to the storm drain system. It is *prohibited* to discharge any chemicals, paints, debris, wastes or wastewater into the gutter, street or storm drain.

Outdoor Storage BMPs

- Install covers and secondary containment areas for all hazardous materials and wastes stored outdoors in accordance with County and/or City standards.
- Keep all temporary waste containers covered, at all times when not in use.
- Sweep outdoor areas instead of using a hose or pressure washer.
- Move all process operations including vehicle/equipment maintenance inside of the building or under a covered and contained area.
- Wash equipment and vehicles in a contained and covered wash bay which is closed-loop or connected to a clarifier sized to local standards and discharged to a sanitary sewer or take them to a commercial car wash.



Spills and Clean Up BMPs

- Keep the work site clean and orderly. Remove debris in a timely fashion. Sweep up the area.
- Clean up spills immediately when they occur, using dry clean up methods such as absorbent materials or sweep followed by proper disposal of materials.
- Always have a spill kit available near chemical loading dock doors and vehicle maintenance and fueling areas.
- Follow your Business Emergency Plan, as filed with the local Fire Department.
- Report all prohibited discharges and non-implementation of BMPs to your local Stormwater Coordinator as listed on the back of this pamphlet.
- Report hazardous materials spills to 951-358-5055 or call after hours to 951-782-2973 or, if an emergency, call the Fire Department's Haz Mat Team at 911.



Plastic Manufacturing Facilities BMPs

AB 258 requires plastic product manufacturers to use BMPs, such as safe storage and clean-up procedures to prevent plastic pellets (nurdles) from entering the waterway. The plastic pellets are released into the environment during transporting, packaging and processing and migrate to waterways through the storm drain system. AB 258 will help protect fish and wildlife from the hazards of plastic pollution.

Training BMPs

As prescribed by your City and County Stormwater Ordinance(s), train employees in spill procedures and prohibit non-stormwater discharges to the storm drain system. Applicable BMP examples can be found at www.cabmphandbooks.com.

Permitting

Stormwater discharges associated with specific categories for industrial facilities are regulated by the State Water Resources Control Board through an Industrial Stormwater General Permit. A copy of this General Permit and application forms are available at: www.waterboards.ca.gov, select stormwater then the industrial quick link.

To report illegal dumping or for more information on stormwater pollution prevention call: 1-800-506-2555 or e-mail us at: fcnpdes@rcflood.org.