APPENDIX I1

CORSICA PRELIMINARY DRAINAGE REPORT

PRELIMINARY DRAINAGE ANALYSIS

FOR

APN 330-180-006, 010 & 046

GOETZ ROAD / CORSICA LANE

CITY OF MENIFEE

RIVERSIDE COUNTY, CALIFORNIA

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This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein.



11/09/2023

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I. PURPOSE AND SCOPE

The purpose of this drainage analysis is to quantify the 100-year storm event runoff emanating from the on-site drainage areas for the proposed industrial warehouse development located in the City of Menifee, Riverside County, California. The study will analyze the existing and proposed hydrologic conditions of the Project's drainage areas and determine the necessary drainage improvements to convey the 100-year Project flows through the property.

The scope of this analysis includes the following:

1. Determination of points of flow concentration and drainage areas.
2. Determination of the on-site 100-year peak storm flows based upon the existing and proposed conditions utilizing the Civil Design Software, Rational Tabling program for Riverside County.
3. Preparation of hydrology maps.
4. Preparation of the drainage report.

II. PROJECT DESCRIPTION

The proposed project is located in the City of Menifee, County of Riverside, California. The site is located along the east side of Goetz Road and the west side of Wheat Street between Ethanac Road to the north, and McLaughlin Road, to the south. The project site is made up of three parcels, which are: APN 330-180-006, 010, & 046. The site is bounded by vacant land to the north, Wheat Street to the east, vacant land to the south, and Goetz Road to the west. The existing boundary area is approximately 13.66 acres in size. The project proposes to join the existing four parcels and make three separate parcels. Each parcel is proposed to be developed with an industrial warehouse building with associated parking, hardscape, landscape, and access. Proposed street dedications for Goetz Road, Wheat Street, and Corsica Lane will bring the total net project area to approximately 12.16 acres.

III. DRAINAGE AREA OVERVIEW

Existing Condition

The project site is currently vacant and undeveloped. Topographically, site elevations range from approximately 1474.00 feet to 1456.00 feet above Mean Sea Level (MSL). The project site generally drains from the south to the north at an approximate grade of 2.40%. The vacant parcels to the south (APN 330-180-042 & 047) contribute tributary flows to the site. A proposed concrete channel will run adjacent to the property line directing off site flows around the site. There is an existing ridge in the topography, causing a portion of flows to be tributary to Goetz road and the other portion being tributary to Wheat Street.

The proposed concrete channel will be designed to convey off-site flows to their historic paths.

Proposed Condition

Upon development, the site will be separated into two drainage areas, denoted in this study as area A1 and area A2. Drainage area A1 consists of the larger building adjacent to Goetz Road (Parcel 1). Drainage area A2 consists of the proposed building on the south side of Corsica (Parcel 2). Flows generated by Parcel 1 will be directed northerly via sheet flow, ribbon gutter and curb & gutter where flows will enter one of 2 proposed drop inlets. The proposed drop inlets will direct flows to a proposed underground detention basin located under the drive aisle along the north side of Parcel 1. Flows from the proposed underground basin will be directed to a Modular Wetland system for water quality purposes. Treated flows will discharge the system and be directed to a proposed sump and pump where flows will be pumped to a proposed under sidewalk drain for flows to enter Goetz Road right of way. Basin overflow will be provided from the back of the proposed catch basin located at the northwest corner of Parcel 1 to a proposed under sidewalk drain to Goetz Road.

Area A2 (Parcel 2) will drain northerly via sheet flow, ribbon gutter, and curb & gutter to one of two proposed drop inlets. Flows captured by the inlets will be directed to a proposed underground detention basin located on the northwest portion of Parcel 2. Flows from the basin will be directed to a proposed sump and pump. Flows will be pumped to a proposed Modular Wetland system for water quality. Treated flows discharging the Modular Wetlands will be directed to another sump and pump that will pump flows to a proposed under sidewalk drain for flows to enter Corsica Lane right of way. Basin overflow will be provided from the back of the proposed catch basin located at the northwest corner of Parcel 2 to a proposed catch basin located on the north side of the proposed cul-de-sac of Corsica Lane.

Off-Site

Proposed improvements to Corsica Lane will include a high point just east of the center of the proposed improvements. Street flows from the east side of the high point will be directed east to Wheat Street. Flows generated by the west side will be captured by a proposed catch basin. Flows from the catch basin will be directed northerly to the proposed underground basin in Parcel 1.

Tributary flows from the south end at Mclaughlin Road where a proposed housing tract proposes to convey flows from the drainage area south of Mclaughlin Road in a proposed underground storm drain system easterly down McLaughlin Road, then north to the existing trapezoidal channel on the north side of Ethanac Road. As seen in Appendix E, the peak flow rate generated from the off-site area tributary to the site does not exceed 8.93 CFS. The proposed concrete channel adjacent to the southerly project boundary will be sized to convey flows to a proposed under sidewalk drains.

IV. HYDROLOGY

The Riverside County Hydrology Manual (RCFC&WCD) was used to develop the hydrologic parameters for the hydrology analysis. In addition, Hydrologic Soil Groups (HSG) were determined using the Natural Resources Conservation Service Web Soil Survey. The study area consists of two soil types. 95% of the site consists of soul type "C", and the other 5% consists of type "B". (see Appendix E).

The Rational Method was used to determine the peak flow rates and times of concentration under the existing and proposed conditions. Computations were performed using the RSBC computer program developed by Civil Cadd/Civil Design Engineering Software.

V. RESULTS

For preliminary sizing of the proposed underground detention basin, a unit hydrograph analysis was performed for the 10-year, 24-hour storm event for both the existing condition and proposed condition. Calculations can be found in Appendix C and Appendix D. Results of the analysis are found below in Table 5-1 for area A1 and Table 5-2 for area A2. The difference in runoff volume for the existing and proposed condition in area A1 is 0.89 acre-feet, which is approximately 38,800 cubic feet. The 10-year storm for the proposed condition has a peak flow rate of 3.07 cfs compared to the existing condition of 2.55 cfs. The difference in runoff volume for the existing and proposed condition in area A2 is 0.49 acre-feet, which is approximately 21,350 cubic feet. The 10-year storm for the proposed condition has a peak flow rate of 1.64 cfs compared to the existing condition of 1.39 cfs.

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_{10} (cfs)	V_{10} (ac-ft)
Existing	7.93	2.55	0.88
Proposed	7.93	3.07	1.77

Table 5-1: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results (area A1)

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_{10} (cfs)	V_{10} (ac-ft)
Existing	4.23	1.39	0.47
Proposed	4.23	1.64	0.96

Table 5-2: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results (area A2)

VI. STUDY FINDINGS

The proposed basin will help reduce runoff volume during large storms and also help mitigate for increased peak flow rate caused by the development. Post-development flows

will enter the underground basin via drop inlet. Flows from the basin will be treated by proposed modular wetlands, and treated flows will be discharged from the modular wetlands to the right of way for flows to continue north as they do historically.

VII. CONCLUSION

The proposed underground basins have been sized to detain the difference in volume between the existing condition and the proposed condition for the 10-year, 24-hour storm event. The basin will help reduce flood volume leaving the site and help mitigate post-development flow rates. Flows captured onsite will be directed to the proposed modular wetlands system for water quality purposes and discharge into the right of way.

VIII. REFERENCES

1. Riverside County; *Riverside County Flood Control & Water Conservation District Hydrology Manual*, April 1978.
2. National Resources Conservation Service; Web Soil Survey. September 29, 2021.
3. NOAA's National Weather Service; NOAA Atlas 14, Volume 6, Version 2. November 10, 2021

FIGURE 1: REGIONAL VICINITY MAP



FIGURE 2: LOCAL VICINITY MAP

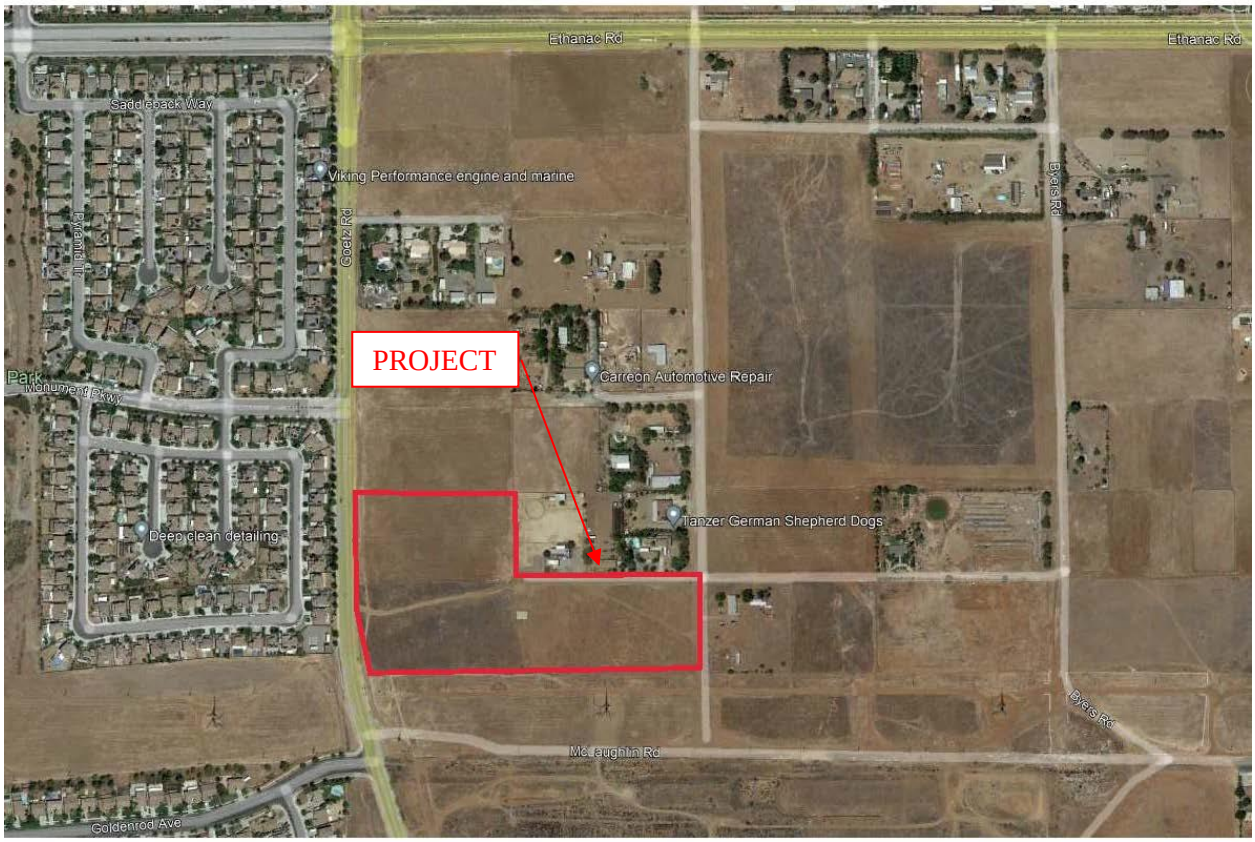
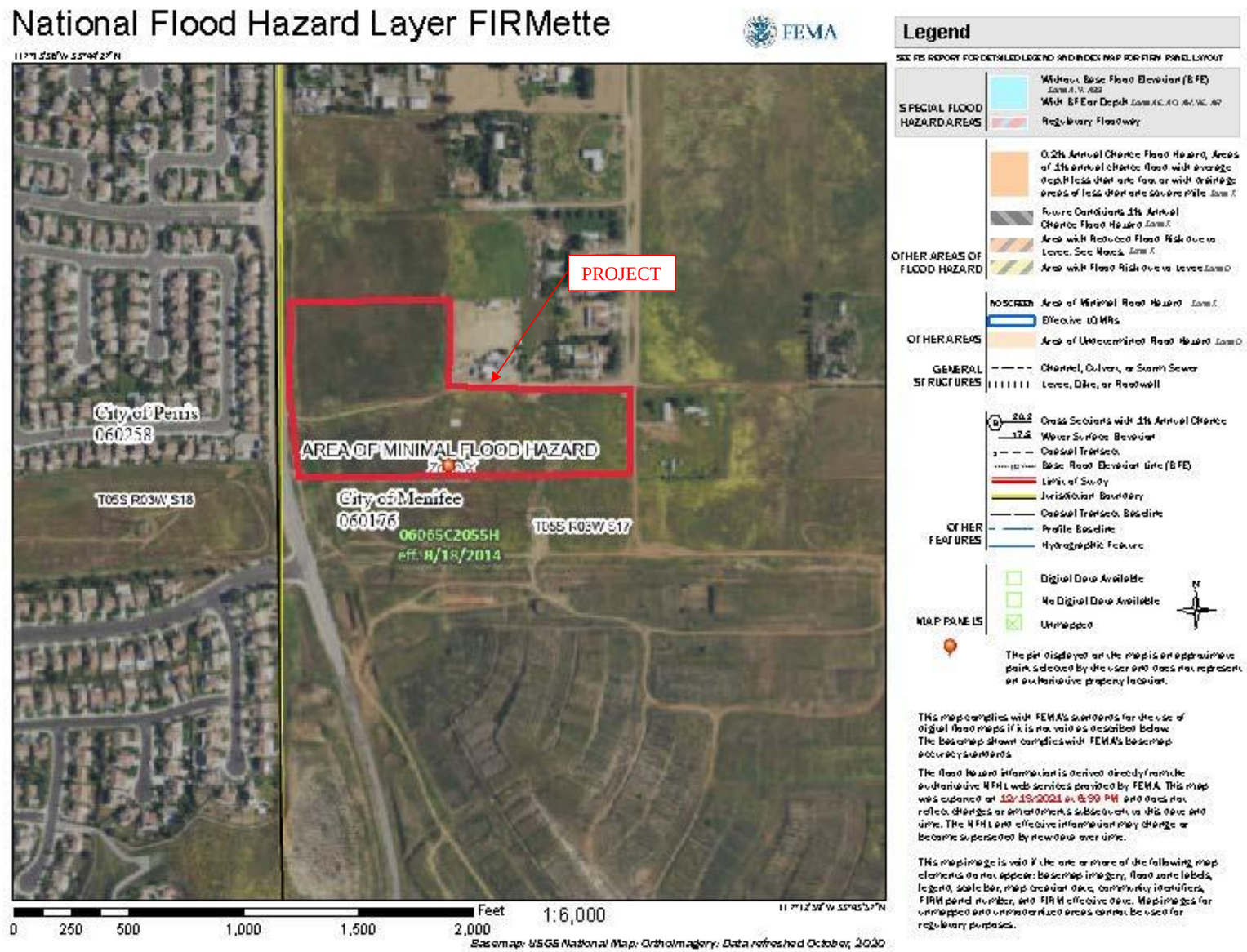


FIGURE 3: FEMA FLOODPLAIN MAP



APPENDIX A

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (RATIONAL METHOD)

APPENDIX A.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 11/08/23 File:10.out

1494-0008 GOETZ MENIFEE
10 YEAR STORM EVENT
PRE DEVELOPMENT

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

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

Program License Serial Number 6522

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 764.000(Ft.)
Top (of initial area) elevation = 73.700(Ft.)
Bottom (of initial area) elevation = 56.900(Ft.)
Difference in elevation = 16.800(Ft.)
Slope = 0.02199 s(percent)= 2.20
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 16.183 min.

```
Rainfall intensity =      1.482(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.782
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  85.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      9.189(CFS)
Total initial stream area =        7.930(Ac.)
Pervious area fraction = 1.000


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Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   315.000(Ft.)
Top (of initial area) elevation =    73.600(Ft.)
Bottom (of initial area) elevation =    67.600(Ft.)
Difference in elevation =     6.000(Ft.)
Slope =    0.01905  s(percent)=       1.90
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.685 min.
Rainfall intensity =      1.739(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.797
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  85.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      5.863(CFS)
Total initial stream area =        4.230(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =          12.16 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  85.6
```

APPENDIX B

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (RATIONAL METHOD)

APPENDIX B.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 11/08/23 File:10.out

1494-0008 GOETZ MENIFEE
10 YEAR STORM EVENT
POST DEVELOPMENT

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

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

Program License Serial Number 6522

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 948.000(Ft.)
Top (of initial area) elevation = 66.850(Ft.)
Bottom (of initial area) elevation = 59.300(Ft.)
Difference in elevation = 7.550(Ft.)
Slope = 0.00796 s(percent)= 0.80
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.235 min.

```
Rainfall intensity =      1.700(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.876
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  68.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =     11.810(CFS)
Total initial stream area =        7.930(Ac.)
Pervious area fraction = 0.100


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Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   750.000(Ft.)
Top (of initial area) elevation =    71.600(Ft.)
Bottom (of initial area) elevation =    65.500(Ft.)
Difference in elevation =     6.100(Ft.)
Slope =    0.00813  s(percent)=       0.81
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   11.094 min.
Rainfall intensity =      1.784(In/Hr) for a    10.0 year storm
COMMERCIAL subarea type
Runoff Coefficient = 0.877
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.050
Decimal fraction soil group C = 0.950
Decimal fraction soil group D = 0.000
RI index for soil(AMC 2)  =  68.35
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      6.615(CFS)
Total initial stream area =        4.230(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =          12.16 (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 =  68.3
```

APPENDIX C

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (UNIT HYDROGRAPH)

APPENDIX C.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

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 11/09/23 File: 10A12410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0008 GOETZ MENIFEE
10-YEAR, 24-HOUR STORM EVENT
PRE DEVELOPMENT
A1

Drainage Area = 7.93(Ac.) = 0.012 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.93(Ac.) = 0.012 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.162 Hr.
Lag time = 9.71 Min.
25% of lag time = 2.43 Min.
40% of lag time = 3.88 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]
7.93	2.06	16.34

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.93	5.32	42.19

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.401(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.401(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.930	88.00	0.000

Total Area Entered = 7.93(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	88.0	0.153	0.000	0.153	1.000	0.153
					Sum (F) =	0.153

Area averaged mean soil loss (F) (In/Hr) = 0.153
Minimum soil loss rate ((In/Hr)) = 0.076
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	51.504	6.413	0.512
2	0.167	103.008	27.420	2.191
3	0.250	154.512	28.671	2.291
4	0.333	206.016	12.437	0.994
5	0.417	257.520	6.660	0.532
6	0.500	309.023	4.638	0.371
7	0.583	360.527	3.331	0.266
8	0.667	412.031	2.510	0.201
9	0.750	463.535	1.826	0.146
10	0.833	515.039	1.556	0.124
11	0.917	566.543	1.226	0.098
12	1.000	618.047	0.962	0.077
13	1.083	669.551	0.750	0.060
14	1.167	721.055	0.555	0.044
15	1.250	772.559	0.515	0.041
16	1.333	824.063	0.532	0.043
			Sum = 100.000	Sum= 7.992

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.271)	0.024	0.003
2	0.17	0.07	0.027	(0.270)	0.024	0.003
3	0.25	0.07	0.027	(0.269)	0.024	0.003
4	0.33	0.10	0.041	(0.268)	0.037	0.004
5	0.42	0.10	0.041	(0.267)	0.037	0.004
6	0.50	0.10	0.041	(0.266)	0.037	0.004
7	0.58	0.10	0.041	(0.265)	0.037	0.004
8	0.67	0.10	0.041	(0.264)	0.037	0.004
9	0.75	0.10	0.041	(0.263)	0.037	0.004
10	0.83	0.13	0.054	(0.262)	0.049	0.005
11	0.92	0.13	0.054	(0.260)	0.049	0.005
12	1.00	0.13	0.054	(0.259)	0.049	0.005
13	1.08	0.10	0.041	(0.258)	0.037	0.004
14	1.17	0.10	0.041	(0.257)	0.037	0.004
15	1.25	0.10	0.041	(0.256)	0.037	0.004
16	1.33	0.10	0.041	(0.255)	0.037	0.004
17	1.42	0.10	0.041	(0.254)	0.037	0.004
18	1.50	0.10	0.041	(0.253)	0.037	0.004
19	1.58	0.10	0.041	(0.252)	0.037	0.004
20	1.67	0.10	0.041	(0.251)	0.037	0.004
21	1.75	0.10	0.041	(0.250)	0.037	0.004
22	1.83	0.13	0.054	(0.249)	0.049	0.005
23	1.92	0.13	0.054	(0.248)	0.049	0.005
24	2.00	0.13	0.054	(0.247)	0.049	0.005
25	2.08	0.13	0.054	(0.246)	0.049	0.005
26	2.17	0.13	0.054	(0.245)	0.049	0.005
27	2.25	0.13	0.054	(0.244)	0.049	0.005
28	2.33	0.13	0.054	(0.243)	0.049	0.005
29	2.42	0.13	0.054	(0.242)	0.049	0.005
30	2.50	0.13	0.054	(0.241)	0.049	0.005
31	2.58	0.17	0.068	(0.240)	0.061	0.007
32	2.67	0.17	0.068	(0.239)	0.061	0.007
33	2.75	0.17	0.068	(0.238)	0.061	0.007
34	2.83	0.17	0.068	(0.237)	0.061	0.007
35	2.92	0.17	0.068	(0.236)	0.061	0.007
36	3.00	0.17	0.068	(0.235)	0.061	0.007
37	3.08	0.17	0.068	(0.234)	0.061	0.007
38	3.17	0.17	0.068	(0.233)	0.061	0.007
39	3.25	0.17	0.068	(0.233)	0.061	0.007
40	3.33	0.17	0.068	(0.232)	0.061	0.007
41	3.42	0.17	0.068	(0.231)	0.061	0.007
42	3.50	0.17	0.068	(0.230)	0.061	0.007
43	3.58	0.17	0.068	(0.229)	0.061	0.007
44	3.67	0.17	0.068	(0.228)	0.061	0.007
45	3.75	0.17	0.068	(0.227)	0.061	0.007
46	3.83	0.20	0.082	(0.226)	0.073	0.008
47	3.92	0.20	0.082	(0.225)	0.073	0.008
48	4.00	0.20	0.082	(0.224)	0.073	0.008
49	4.08	0.20	0.082	(0.223)	0.073	0.008

50	4.17	0.20	0.082	(0.222)	0.073	0.008
51	4.25	0.20	0.082	(0.221)	0.073	0.008
52	4.33	0.23	0.095	(0.220)	0.086	0.010
53	4.42	0.23	0.095	(0.219)	0.086	0.010
54	4.50	0.23	0.095	(0.218)	0.086	0.010
55	4.58	0.23	0.095	(0.217)	0.086	0.010
56	4.67	0.23	0.095	(0.216)	0.086	0.010
57	4.75	0.23	0.095	(0.215)	0.086	0.010
58	4.83	0.27	0.109	(0.214)	0.098	0.011
59	4.92	0.27	0.109	(0.214)	0.098	0.011
60	5.00	0.27	0.109	(0.213)	0.098	0.011
61	5.08	0.20	0.082	(0.212)	0.073	0.008
62	5.17	0.20	0.082	(0.211)	0.073	0.008
63	5.25	0.20	0.082	(0.210)	0.073	0.008
64	5.33	0.23	0.095	(0.209)	0.086	0.010
65	5.42	0.23	0.095	(0.208)	0.086	0.010
66	5.50	0.23	0.095	(0.207)	0.086	0.010
67	5.58	0.27	0.109	(0.206)	0.098	0.011
68	5.67	0.27	0.109	(0.205)	0.098	0.011
69	5.75	0.27	0.109	(0.204)	0.098	0.011
70	5.83	0.27	0.109	(0.203)	0.098	0.011
71	5.92	0.27	0.109	(0.203)	0.098	0.011
72	6.00	0.27	0.109	(0.202)	0.098	0.011
73	6.08	0.30	0.122	(0.201)	0.110	0.012
74	6.17	0.30	0.122	(0.200)	0.110	0.012
75	6.25	0.30	0.122	(0.199)	0.110	0.012
76	6.33	0.30	0.122	(0.198)	0.110	0.012
77	6.42	0.30	0.122	(0.197)	0.110	0.012
78	6.50	0.30	0.122	(0.196)	0.110	0.012
79	6.58	0.33	0.136	(0.195)	0.122	0.014
80	6.67	0.33	0.136	(0.195)	0.122	0.014
81	6.75	0.33	0.136	(0.194)	0.122	0.014
82	6.83	0.33	0.136	(0.193)	0.122	0.014
83	6.92	0.33	0.136	(0.192)	0.122	0.014
84	7.00	0.33	0.136	(0.191)	0.122	0.014
85	7.08	0.33	0.136	(0.190)	0.122	0.014
86	7.17	0.33	0.136	(0.189)	0.122	0.014
87	7.25	0.33	0.136	(0.188)	0.122	0.014
88	7.33	0.37	0.150	(0.188)	0.135	0.015
89	7.42	0.37	0.150	(0.187)	0.135	0.015
90	7.50	0.37	0.150	(0.186)	0.135	0.015
91	7.58	0.40	0.163	(0.185)	0.147	0.016
92	7.67	0.40	0.163	(0.184)	0.147	0.016
93	7.75	0.40	0.163	(0.183)	0.147	0.016
94	7.83	0.43	0.177	(0.183)	0.159	0.018
95	7.92	0.43	0.177	(0.182)	0.159	0.018
96	8.00	0.43	0.177	(0.181)	0.159	0.018
97	8.08	0.50	0.204	0.180	(0.184)	0.024
98	8.17	0.50	0.204	0.179	(0.184)	0.025
99	8.25	0.50	0.204	0.178	(0.184)	0.026
100	8.33	0.50	0.204	0.177	(0.184)	0.027
101	8.42	0.50	0.204	0.177	(0.184)	0.027
102	8.50	0.50	0.204	0.176	(0.184)	0.028
103	8.58	0.53	0.218	0.175	(0.196)	0.043

104	8.67	0.53	0.218	0.174	(0.196)	0.043
105	8.75	0.53	0.218	0.173	(0.196)	0.044
106	8.83	0.57	0.231	0.173	(0.208)	0.059
107	8.92	0.57	0.231	0.172	(0.208)	0.060
108	9.00	0.57	0.231	0.171	(0.208)	0.060
109	9.08	0.63	0.258	0.170	(0.233)	0.088
110	9.17	0.63	0.258	0.169	(0.233)	0.089
111	9.25	0.63	0.258	0.168	(0.233)	0.090
112	9.33	0.67	0.272	0.168	(0.245)	0.104
113	9.42	0.67	0.272	0.167	(0.245)	0.105
114	9.50	0.67	0.272	0.166	(0.245)	0.106
115	9.58	0.70	0.286	0.165	(0.257)	0.120
116	9.67	0.70	0.286	0.165	(0.257)	0.121
117	9.75	0.70	0.286	0.164	(0.257)	0.122
118	9.83	0.73	0.299	0.163	(0.269)	0.136
119	9.92	0.73	0.299	0.162	(0.269)	0.137
120	10.00	0.73	0.299	0.161	(0.269)	0.138
121	10.08	0.50	0.204	0.161	(0.184)	0.043
122	10.17	0.50	0.204	0.160	(0.184)	0.044
123	10.25	0.50	0.204	0.159	(0.184)	0.045
124	10.33	0.50	0.204	0.158	(0.184)	0.046
125	10.42	0.50	0.204	0.157	(0.184)	0.047
126	10.50	0.50	0.204	0.157	(0.184)	0.047
127	10.58	0.67	0.272	0.156	(0.245)	0.116
128	10.67	0.67	0.272	0.155	(0.245)	0.117
129	10.75	0.67	0.272	0.154	(0.245)	0.118
130	10.83	0.67	0.272	0.154	(0.245)	0.118
131	10.92	0.67	0.272	0.153	(0.245)	0.119
132	11.00	0.67	0.272	0.152	(0.245)	0.120
133	11.08	0.63	0.258	0.151	(0.233)	0.107
134	11.17	0.63	0.258	0.151	(0.233)	0.108
135	11.25	0.63	0.258	0.150	(0.233)	0.109
136	11.33	0.63	0.258	0.149	(0.233)	0.109
137	11.42	0.63	0.258	0.148	(0.233)	0.110
138	11.50	0.63	0.258	0.148	(0.233)	0.111
139	11.58	0.57	0.231	0.147	(0.208)	0.084
140	11.67	0.57	0.231	0.146	(0.208)	0.085
141	11.75	0.57	0.231	0.146	(0.208)	0.086
142	11.83	0.60	0.245	0.145	(0.220)	0.100
143	11.92	0.60	0.245	0.144	(0.220)	0.101
144	12.00	0.60	0.245	0.143	(0.220)	0.102
145	12.08	0.83	0.340	0.143	(0.306)	0.197
146	12.17	0.83	0.340	0.142	(0.306)	0.198
147	12.25	0.83	0.340	0.141	(0.306)	0.199
148	12.33	0.87	0.354	0.141	(0.318)	0.213
149	12.42	0.87	0.354	0.140	(0.318)	0.214
150	12.50	0.87	0.354	0.139	(0.318)	0.215
151	12.58	0.93	0.381	0.138	(0.343)	0.243
152	12.67	0.93	0.381	0.138	(0.343)	0.243
153	12.75	0.93	0.381	0.137	(0.343)	0.244
154	12.83	0.97	0.395	0.136	(0.355)	0.258
155	12.92	0.97	0.395	0.136	(0.355)	0.259
156	13.00	0.97	0.395	0.135	(0.355)	0.260
157	13.08	1.13	0.463	0.134	(0.416)	0.328

158	13.17	1.13	0.463	0.134	(0.416)	0.329
159	13.25	1.13	0.463	0.133	(0.416)	0.330
160	13.33	1.13	0.463	0.132	(0.416)	0.330
161	13.42	1.13	0.463	0.132	(0.416)	0.331
162	13.50	1.13	0.463	0.131	(0.416)	0.332
163	13.58	0.77	0.313	0.130	(0.282)	0.183
164	13.67	0.77	0.313	0.130	(0.282)	0.183
165	13.75	0.77	0.313	0.129	(0.282)	0.184
166	13.83	0.77	0.313	0.128	(0.282)	0.185
167	13.92	0.77	0.313	0.128	(0.282)	0.185
168	14.00	0.77	0.313	0.127	(0.282)	0.186
169	14.08	0.90	0.367	0.126	(0.331)	0.241
170	14.17	0.90	0.367	0.126	(0.331)	0.242
171	14.25	0.90	0.367	0.125	(0.331)	0.242
172	14.33	0.87	0.354	0.124	(0.318)	0.229
173	14.42	0.87	0.354	0.124	(0.318)	0.230
174	14.50	0.87	0.354	0.123	(0.318)	0.231
175	14.58	0.87	0.354	0.122	(0.318)	0.231
176	14.67	0.87	0.354	0.122	(0.318)	0.232
177	14.75	0.87	0.354	0.121	(0.318)	0.233
178	14.83	0.83	0.340	0.121	(0.306)	0.220
179	14.92	0.83	0.340	0.120	(0.306)	0.220
180	15.00	0.83	0.340	0.119	(0.306)	0.221
181	15.08	0.80	0.327	0.119	(0.294)	0.208
182	15.17	0.80	0.327	0.118	(0.294)	0.208
183	15.25	0.80	0.327	0.118	(0.294)	0.209
184	15.33	0.77	0.313	0.117	(0.282)	0.196
185	15.42	0.77	0.313	0.116	(0.282)	0.197
186	15.50	0.77	0.313	0.116	(0.282)	0.197
187	15.58	0.63	0.258	0.115	(0.233)	0.143
188	15.67	0.63	0.258	0.115	(0.233)	0.144
189	15.75	0.63	0.258	0.114	(0.233)	0.145
190	15.83	0.63	0.258	0.113	(0.233)	0.145
191	15.92	0.63	0.258	0.113	(0.233)	0.146
192	16.00	0.63	0.258	0.112	(0.233)	0.146
193	16.08	0.13	0.054	(0.112)	0.049	0.005
194	16.17	0.13	0.054	(0.111)	0.049	0.005
195	16.25	0.13	0.054	(0.110)	0.049	0.005
196	16.33	0.13	0.054	(0.110)	0.049	0.005
197	16.42	0.13	0.054	(0.109)	0.049	0.005
198	16.50	0.13	0.054	(0.109)	0.049	0.005
199	16.58	0.10	0.041	(0.108)	0.037	0.004
200	16.67	0.10	0.041	(0.108)	0.037	0.004
201	16.75	0.10	0.041	(0.107)	0.037	0.004
202	16.83	0.10	0.041	(0.107)	0.037	0.004
203	16.92	0.10	0.041	(0.106)	0.037	0.004
204	17.00	0.10	0.041	(0.106)	0.037	0.004
205	17.08	0.17	0.068	(0.105)	0.061	0.007
206	17.17	0.17	0.068	(0.104)	0.061	0.007
207	17.25	0.17	0.068	(0.104)	0.061	0.007
208	17.33	0.17	0.068	(0.103)	0.061	0.007
209	17.42	0.17	0.068	(0.103)	0.061	0.007
210	17.50	0.17	0.068	(0.102)	0.061	0.007
211	17.58	0.17	0.068	(0.102)	0.061	0.007

212	17.67	0.17	0.068	(0.101)	0.061	0.007
213	17.75	0.17	0.068	(0.101)	0.061	0.007
214	17.83	0.13	0.054	(0.100)	0.049	0.005
215	17.92	0.13	0.054	(0.100)	0.049	0.005
216	18.00	0.13	0.054	(0.099)	0.049	0.005
217	18.08	0.13	0.054	(0.099)	0.049	0.005
218	18.17	0.13	0.054	(0.098)	0.049	0.005
219	18.25	0.13	0.054	(0.098)	0.049	0.005
220	18.33	0.13	0.054	(0.097)	0.049	0.005
221	18.42	0.13	0.054	(0.097)	0.049	0.005
222	18.50	0.13	0.054	(0.097)	0.049	0.005
223	18.58	0.10	0.041	(0.096)	0.037	0.004
224	18.67	0.10	0.041	(0.096)	0.037	0.004
225	18.75	0.10	0.041	(0.095)	0.037	0.004
226	18.83	0.07	0.027	(0.095)	0.024	0.003
227	18.92	0.07	0.027	(0.094)	0.024	0.003
228	19.00	0.07	0.027	(0.094)	0.024	0.003
229	19.08	0.10	0.041	(0.093)	0.037	0.004
230	19.17	0.10	0.041	(0.093)	0.037	0.004
231	19.25	0.10	0.041	(0.092)	0.037	0.004
232	19.33	0.13	0.054	(0.092)	0.049	0.005
233	19.42	0.13	0.054	(0.092)	0.049	0.005
234	19.50	0.13	0.054	(0.091)	0.049	0.005
235	19.58	0.10	0.041	(0.091)	0.037	0.004
236	19.67	0.10	0.041	(0.090)	0.037	0.004
237	19.75	0.10	0.041	(0.090)	0.037	0.004
238	19.83	0.07	0.027	(0.090)	0.024	0.003
239	19.92	0.07	0.027	(0.089)	0.024	0.003
240	20.00	0.07	0.027	(0.089)	0.024	0.003
241	20.08	0.10	0.041	(0.088)	0.037	0.004
242	20.17	0.10	0.041	(0.088)	0.037	0.004
243	20.25	0.10	0.041	(0.088)	0.037	0.004
244	20.33	0.10	0.041	(0.087)	0.037	0.004
245	20.42	0.10	0.041	(0.087)	0.037	0.004
246	20.50	0.10	0.041	(0.086)	0.037	0.004
247	20.58	0.10	0.041	(0.086)	0.037	0.004
248	20.67	0.10	0.041	(0.086)	0.037	0.004
249	20.75	0.10	0.041	(0.085)	0.037	0.004
250	20.83	0.07	0.027	(0.085)	0.024	0.003
251	20.92	0.07	0.027	(0.085)	0.024	0.003
252	21.00	0.07	0.027	(0.084)	0.024	0.003
253	21.08	0.10	0.041	(0.084)	0.037	0.004
254	21.17	0.10	0.041	(0.084)	0.037	0.004
255	21.25	0.10	0.041	(0.083)	0.037	0.004
256	21.33	0.07	0.027	(0.083)	0.024	0.003
257	21.42	0.07	0.027	(0.083)	0.024	0.003
258	21.50	0.07	0.027	(0.082)	0.024	0.003
259	21.58	0.10	0.041	(0.082)	0.037	0.004
260	21.67	0.10	0.041	(0.082)	0.037	0.004
261	21.75	0.10	0.041	(0.082)	0.037	0.004
262	21.83	0.07	0.027	(0.081)	0.024	0.003
263	21.92	0.07	0.027	(0.081)	0.024	0.003
264	22.00	0.07	0.027	(0.081)	0.024	0.003
265	22.08	0.10	0.041	(0.080)	0.037	0.004

266	22.17	0.10	0.041	(0.080)	0.037	0.004
267	22.25	0.10	0.041	(0.080)	0.037	0.004
268	22.33	0.07	0.027	(0.080)	0.024	0.003
269	22.42	0.07	0.027	(0.079)	0.024	0.003
270	22.50	0.07	0.027	(0.079)	0.024	0.003
271	22.58	0.07	0.027	(0.079)	0.024	0.003
272	22.67	0.07	0.027	(0.079)	0.024	0.003
273	22.75	0.07	0.027	(0.079)	0.024	0.003
274	22.83	0.07	0.027	(0.078)	0.024	0.003
275	22.92	0.07	0.027	(0.078)	0.024	0.003
276	23.00	0.07	0.027	(0.078)	0.024	0.003
277	23.08	0.07	0.027	(0.078)	0.024	0.003
278	23.17	0.07	0.027	(0.078)	0.024	0.003
279	23.25	0.07	0.027	(0.077)	0.024	0.003
280	23.33	0.07	0.027	(0.077)	0.024	0.003
281	23.42	0.07	0.027	(0.077)	0.024	0.003
282	23.50	0.07	0.027	(0.077)	0.024	0.003
283	23.58	0.07	0.027	(0.077)	0.024	0.003
284	23.67	0.07	0.027	(0.077)	0.024	0.003
285	23.75	0.07	0.027	(0.077)	0.024	0.003
286	23.83	0.07	0.027	(0.077)	0.024	0.003
287	23.92	0.07	0.027	(0.076)	0.024	0.003
288	24.00	0.07	0.027	(0.076)	0.024	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.9

Flood volume = Effective rainfall 1.33(In)
times area 7.9(Ac.)/[(In)/(Ft.)] = 0.9(Ac.Ft)
Total soil loss = 2.07(In)
Total soil loss = 1.370(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 38209.9 Cubic Feet
Total soil loss = 59694.9 Cubic Feet

Peak flow rate of this hydrograph = 2.549(CFS)

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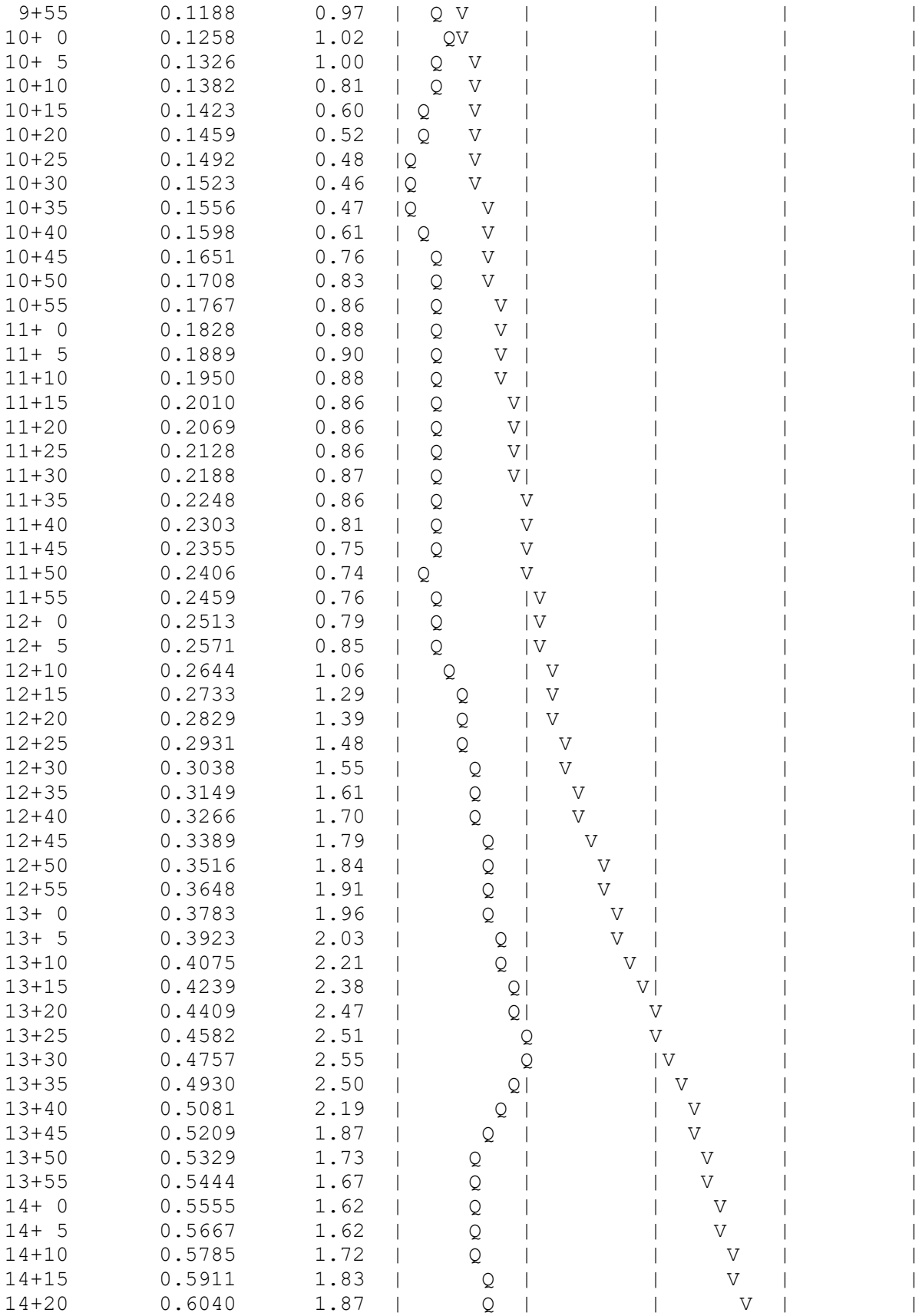
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

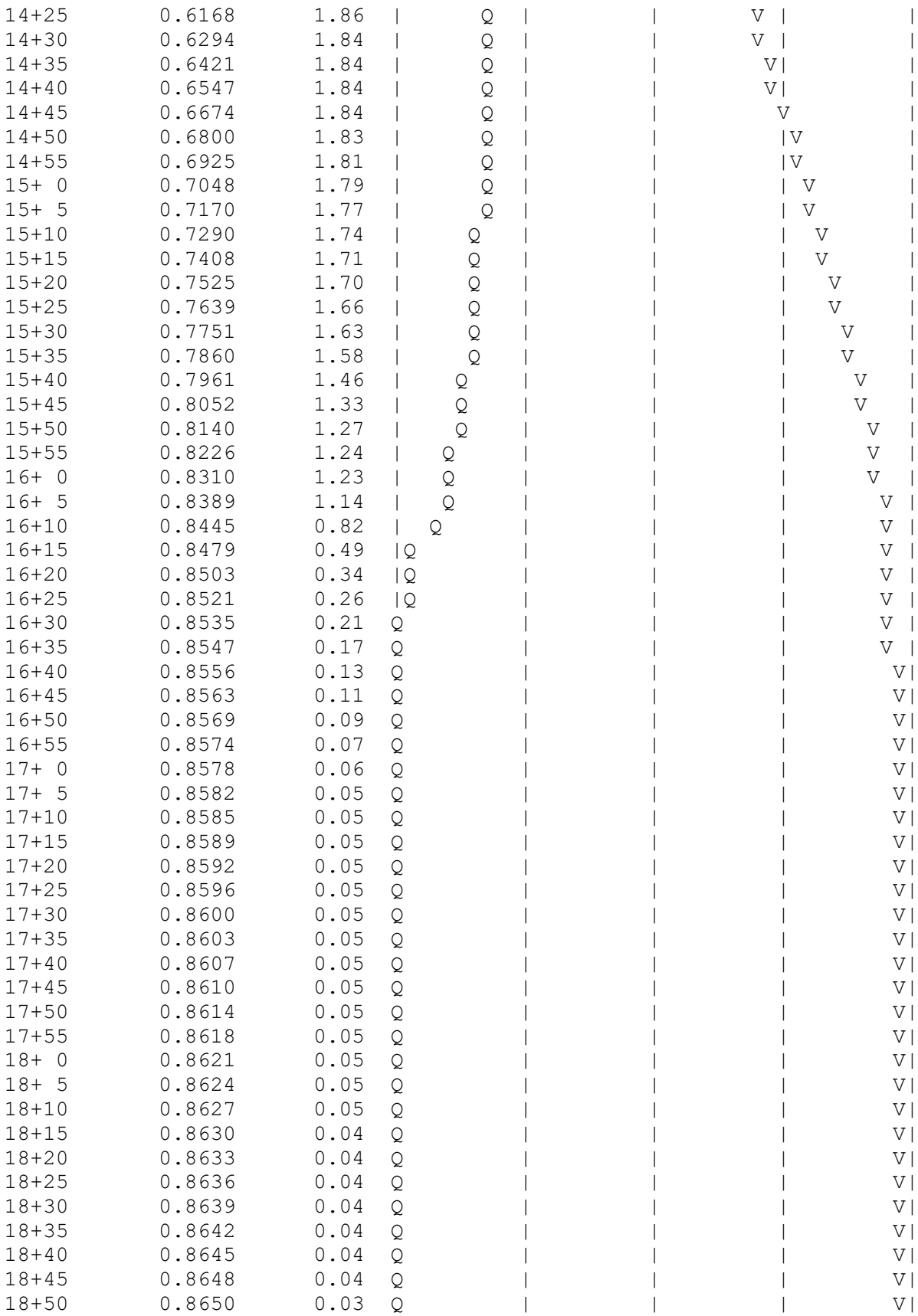
Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0002	0.01	Q	|	|	|	|
0+20	0.0003	0.02	Q	|	|	|	|
0+25	0.0004	0.02	Q	|	|	|	|
0+30	0.0006	0.03	Q	|	|	|	|
0+35	0.0008	0.03	Q	|	|	|	|
0+40	0.0010	0.03	Q	|	|	|	|
0+45	0.0012	0.03	Q	|	|	|	|
0+50	0.0014	0.03	Q	|	|	|	|

0+55	0.0016	0.03	Q				
1+ 0	0.0019	0.04	Q				
1+ 5	0.0022	0.04	Q				
1+10	0.0024	0.04	Q				
1+15	0.0027	0.03	Q				
1+20	0.0029	0.03	Q				
1+25	0.0031	0.03	Q				
1+30	0.0034	0.03	Q				
1+35	0.0036	0.03	Q				
1+40	0.0038	0.03	Q				
1+45	0.0041	0.03	Q				
1+50	0.0043	0.03	Q				
1+55	0.0045	0.04	Q				
2+ 0	0.0048	0.04	Q				
2+ 5	0.0051	0.04	Q				
2+10	0.0054	0.04	Q				
2+15	0.0057	0.04	Q				
2+20	0.0060	0.04	Q				
2+25	0.0063	0.04	Q				
2+30	0.0066	0.04	Q				
2+35	0.0069	0.04	Q				
2+40	0.0072	0.05	Q				
2+45	0.0075	0.05	Q				
2+50	0.0079	0.05	Q				
2+55	0.0082	0.05	Q				
3+ 0	0.0086	0.05	Q				
3+ 5	0.0090	0.05	Q				
3+10	0.0093	0.05	Q				
3+15	0.0097	0.05	Q				
3+20	0.0101	0.05	Q				
3+25	0.0104	0.05	Q				
3+30	0.0108	0.05	Q				
3+35	0.0112	0.05	Q				
3+40	0.0116	0.05	Q				
3+45	0.0119	0.05	Q				
3+50	0.0123	0.06	Q				
3+55	0.0127	0.06	Q				
4+ 0	0.0131	0.06	Q				
4+ 5	0.0136	0.06	Q				
4+10	0.0140	0.06	Q				
4+15	0.0144	0.06	Q				
4+20	0.0149	0.06	Q				
4+25	0.0154	0.07	Q				
4+30	0.0159	0.07	Q				
4+35	0.0164	0.07	Q				
4+40	0.0169	0.07	Q				
4+45	0.0174	0.07	Q				
4+50	0.0179	0.08	Q				
4+55	0.0184	0.08	Q				
5+ 0	0.0190	0.08	Q				
5+ 5	0.0196	0.08	Q				
5+10	0.0201	0.08	Q				
5+15	0.0206	0.07	Q				
5+20	0.0211	0.07	Q				

5+25	0.0216	0.07	Q				
5+30	0.0221	0.07	QV				
5+35	0.0226	0.08	QV				
5+40	0.0232	0.08	QV				
5+45	0.0237	0.08	QV				
5+50	0.0243	0.08	QV				
5+55	0.0249	0.08	QV				
6+ 0	0.0255	0.09	QV				
6+ 5	0.0261	0.09	QV				
6+10	0.0267	0.09	QV				
6+15	0.0273	0.09	QV				
6+20	0.0280	0.09	QV				
6+25	0.0286	0.10	QV				
6+30	0.0293	0.10	QV				
6+35	0.0300	0.10	QV				
6+40	0.0307	0.10	QV				
6+45	0.0314	0.10	QV				
6+50	0.0321	0.11	QV				
6+55	0.0328	0.11	QV				
7+ 0	0.0336	0.11	QV				
7+ 5	0.0343	0.11	QV				
7+10	0.0351	0.11	QV				
7+15	0.0358	0.11	QV				
7+20	0.0366	0.11	QV				
7+25	0.0373	0.11	QV				
7+30	0.0381	0.12	QV				
7+35	0.0389	0.12	QV				
7+40	0.0398	0.12	QV				
7+45	0.0406	0.12	QV				
7+50	0.0415	0.13	QV				
7+55	0.0424	0.13	QV				
8+ 0	0.0433	0.14	QV				
8+ 5	0.0443	0.14	Q V				
8+10	0.0454	0.16	Q V				
8+15	0.0466	0.17	Q V				
8+20	0.0478	0.18	Q V				
8+25	0.0492	0.19	Q V				
8+30	0.0506	0.20	Q V				
8+35	0.0521	0.22	Q V				
8+40	0.0538	0.25	|QV				
8+45	0.0558	0.29	|QV				
8+50	0.0580	0.32	|QV				
8+55	0.0605	0.36	|QV				
9+ 0	0.0633	0.41	|QV				
9+ 5	0.0664	0.44	|Q V				
9+10	0.0700	0.52	| QV				
9+15	0.0741	0.60	| QV				
9+20	0.0785	0.64	| QV				
9+25	0.0833	0.70	| QV				
9+30	0.0885	0.75	| Q V				
9+35	0.0939	0.79	| QV				
9+40	0.0997	0.84	| QV				
9+45	0.1058	0.88	| QV				
9+50	0.1121	0.92	| Q V				





18+55	0.8652	0.03	Q	|	|	|	V|
19+ 0	0.8654	0.03	Q	|	|	|	V|
19+ 5	0.8656	0.03	Q	|	|	|	V|
19+10	0.8658	0.03	Q	|	|	|	V|
19+15	0.8660	0.03	Q	|	|	|	V|
19+20	0.8662	0.03	Q	|	|	|	V|
19+25	0.8665	0.04	Q	|	|	|	V|
19+30	0.8667	0.04	Q	|	|	|	V|
19+35	0.8670	0.04	Q	|	|	|	V|
19+40	0.8673	0.04	Q	|	|	|	V|
19+45	0.8675	0.03	Q	|	|	|	V|
19+50	0.8677	0.03	Q	|	|	|	V|
19+55	0.8679	0.03	Q	|	|	|	V|
20+ 0	0.8681	0.03	Q	|	|	|	V|
20+ 5	0.8683	0.03	Q	|	|	|	V|
20+10	0.8685	0.03	Q	|	|	|	V|
20+15	0.8687	0.03	Q	|	|	|	V|
20+20	0.8689	0.03	Q	|	|	|	V|
20+25	0.8691	0.03	Q	|	|	|	V|
20+30	0.8693	0.03	Q	|	|	|	V|
20+35	0.8696	0.03	Q	|	|	|	V|
20+40	0.8698	0.03	Q	|	|	|	V|
20+45	0.8700	0.03	Q	|	|	|	V|
20+50	0.8702	0.03	Q	|	|	|	V|
20+55	0.8704	0.03	Q	|	|	|	V|
21+ 0	0.8706	0.03	Q	|	|	|	V|
21+ 5	0.8708	0.03	Q	|	|	|	V|
21+10	0.8710	0.03	Q	|	|	|	V|
21+15	0.8712	0.03	Q	|	|	|	V|
21+20	0.8714	0.03	Q	|	|	|	V|
21+25	0.8716	0.03	Q	|	|	|	V|
21+30	0.8717	0.03	Q	|	|	|	V|
21+35	0.8719	0.02	Q	|	|	|	V|
21+40	0.8721	0.03	Q	|	|	|	V|
21+45	0.8723	0.03	Q	|	|	|	V|
21+50	0.8725	0.03	Q	|	|	|	V|
21+55	0.8727	0.03	Q	|	|	|	V|
22+ 0	0.8729	0.02	Q	|	|	|	V|
22+ 5	0.8730	0.02	Q	|	|	|	V|
22+10	0.8732	0.03	Q	|	|	|	V|
22+15	0.8734	0.03	Q	|	|	|	V|
22+20	0.8736	0.03	Q	|	|	|	V|
22+25	0.8738	0.03	Q	|	|	|	V|
22+30	0.8740	0.02	Q	|	|	|	V|
22+35	0.8742	0.02	Q	|	|	|	V|
22+40	0.8743	0.02	Q	|	|	|	V|
22+45	0.8745	0.02	Q	|	|	|	V|
22+50	0.8746	0.02	Q	|	|	|	V|
22+55	0.8748	0.02	Q	|	|	|	V|
23+ 0	0.8749	0.02	Q	|	|	|	V|
23+ 5	0.8751	0.02	Q	|	|	|	V|
23+10	0.8752	0.02	Q	|	|	|	V|
23+15	0.8754	0.02	Q	|	|	|	V|
23+20	0.8755	0.02	Q	|	|	|	V|

23+25	0.8757	0.02	Q	|	|	|	V|
23+30	0.8758	0.02	Q	|	|	|	V|
23+35	0.8760	0.02	Q	|	|	|	V|
23+40	0.8761	0.02	Q	|	|	|	V|
23+45	0.8763	0.02	Q	|	|	|	V|
23+50	0.8764	0.02	Q	|	|	|	V|
23+55	0.8766	0.02	Q	|	|	|	V|
24+ 0	0.8767	0.02	Q	|	|	|	V|
24+ 5	0.8769	0.02	Q	|	|	|	V|
24+10	0.8770	0.01	Q	|	|	|	V|
24+15	0.8770	0.01	Q	|	|	|	V|
24+20	0.8771	0.01	Q	|	|	|	V|
24+25	0.8771	0.00	Q	|	|	|	V|
24+30	0.8771	0.00	Q	|	|	|	V|
24+35	0.8771	0.00	Q	|	|	|	V|
24+40	0.8771	0.00	Q	|	|	|	V|
24+45	0.8772	0.00	Q	|	|	|	V|
24+50	0.8772	0.00	Q	|	|	|	V|
24+55	0.8772	0.00	Q	|	|	|	V|
25+ 0	0.8772	0.00	Q	|	|	|	V|
25+ 5	0.8772	0.00	Q	|	|	|	V|
25+10	0.8772	0.00	Q	|	|	|	V|
25+15	0.8772	0.00	Q	|	|	|	V

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 11/09/23 File: 10A22410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0008 GOETZ MENIFEE
10-YEAR, 24-HOUR STORM EVENT
PRE DEVELOPMENT
A2

Drainage Area = 4.23(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.23(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.117 Hr.
Lag time = 7.01 Min.
25% of lag time = 1.75 Min.
40% of lag time = 2.81 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]
4.23	2.06	8.71

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.23	5.32	22.50

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.401(In)
Areal adjustment factor = 100.00 %
Adjusted average point rain = 3.401(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.230	88.00	0.000

Total Area Entered = 4.23(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
88.0	88.0	0.153	0.000	0.153	1.000	0.153
					Sum (F) =	0.153

Area averaged mean soil loss (F) (In/Hr) = 0.153
Minimum soil loss rate ((In/Hr)) = 0.076
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	71.286	10.956	0.467
2	0.167	142.572	40.758	1.738
3	0.250	213.858	22.708	0.968
4	0.333	285.144	8.895	0.379
5	0.417	356.430	5.407	0.230
6	0.500	427.716	3.563	0.152
7	0.583	499.002	2.407	0.103
8	0.667	570.288	1.857	0.079
9	0.750	641.574	1.308	0.056
10	0.833	712.860	0.912	0.039
11	0.917	784.146	0.715	0.030
12	1.000	855.432	0.515	0.022
			Sum = 100.000	Sum= 4.263

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	0.027	(0.271)		0.024	0.003
2	0.17	0.07	0.027	(0.270)		0.024	0.003
3	0.25	0.07	0.027	(0.269)		0.024	0.003
4	0.33	0.10	0.041	(0.268)		0.037	0.004
5	0.42	0.10	0.041	(0.267)		0.037	0.004
6	0.50	0.10	0.041	(0.266)		0.037	0.004
7	0.58	0.10	0.041	(0.265)		0.037	0.004
8	0.67	0.10	0.041	(0.264)		0.037	0.004
9	0.75	0.10	0.041	(0.263)		0.037	0.004
10	0.83	0.13	0.054	(0.262)		0.049	0.005
11	0.92	0.13	0.054	(0.260)		0.049	0.005
12	1.00	0.13	0.054	(0.259)		0.049	0.005
13	1.08	0.10	0.041	(0.258)		0.037	0.004
14	1.17	0.10	0.041	(0.257)		0.037	0.004
15	1.25	0.10	0.041	(0.256)		0.037	0.004
16	1.33	0.10	0.041	(0.255)		0.037	0.004
17	1.42	0.10	0.041	(0.254)		0.037	0.004
18	1.50	0.10	0.041	(0.253)		0.037	0.004
19	1.58	0.10	0.041	(0.252)		0.037	0.004
20	1.67	0.10	0.041	(0.251)		0.037	0.004
21	1.75	0.10	0.041	(0.250)		0.037	0.004
22	1.83	0.13	0.054	(0.249)		0.049	0.005
23	1.92	0.13	0.054	(0.248)		0.049	0.005
24	2.00	0.13	0.054	(0.247)		0.049	0.005
25	2.08	0.13	0.054	(0.246)		0.049	0.005
26	2.17	0.13	0.054	(0.245)		0.049	0.005
27	2.25	0.13	0.054	(0.244)		0.049	0.005
28	2.33	0.13	0.054	(0.243)		0.049	0.005
29	2.42	0.13	0.054	(0.242)		0.049	0.005
30	2.50	0.13	0.054	(0.241)		0.049	0.005
31	2.58	0.17	0.068	(0.240)		0.061	0.007
32	2.67	0.17	0.068	(0.239)		0.061	0.007
33	2.75	0.17	0.068	(0.238)		0.061	0.007
34	2.83	0.17	0.068	(0.237)		0.061	0.007
35	2.92	0.17	0.068	(0.236)		0.061	0.007
36	3.00	0.17	0.068	(0.235)		0.061	0.007
37	3.08	0.17	0.068	(0.234)		0.061	0.007
38	3.17	0.17	0.068	(0.233)		0.061	0.007
39	3.25	0.17	0.068	(0.233)		0.061	0.007
40	3.33	0.17	0.068	(0.232)		0.061	0.007
41	3.42	0.17	0.068	(0.231)		0.061	0.007
42	3.50	0.17	0.068	(0.230)		0.061	0.007
43	3.58	0.17	0.068	(0.229)		0.061	0.007
44	3.67	0.17	0.068	(0.228)		0.061	0.007
45	3.75	0.17	0.068	(0.227)		0.061	0.007
46	3.83	0.20	0.082	(0.226)		0.073	0.008
47	3.92	0.20	0.082	(0.225)		0.073	0.008
48	4.00	0.20	0.082	(0.224)		0.073	0.008
49	4.08	0.20	0.082	(0.223)		0.073	0.008
50	4.17	0.20	0.082	(0.222)		0.073	0.008
51	4.25	0.20	0.082	(0.221)		0.073	0.008
52	4.33	0.23	0.095	(0.220)		0.086	0.010
53	4.42	0.23	0.095	(0.219)		0.086	0.010

54	4.50	0.23	0.095	(0.218)	0.086	0.010
55	4.58	0.23	0.095	(0.217)	0.086	0.010
56	4.67	0.23	0.095	(0.216)	0.086	0.010
57	4.75	0.23	0.095	(0.215)	0.086	0.010
58	4.83	0.27	0.109	(0.214)	0.098	0.011
59	4.92	0.27	0.109	(0.214)	0.098	0.011
60	5.00	0.27	0.109	(0.213)	0.098	0.011
61	5.08	0.20	0.082	(0.212)	0.073	0.008
62	5.17	0.20	0.082	(0.211)	0.073	0.008
63	5.25	0.20	0.082	(0.210)	0.073	0.008
64	5.33	0.23	0.095	(0.209)	0.086	0.010
65	5.42	0.23	0.095	(0.208)	0.086	0.010
66	5.50	0.23	0.095	(0.207)	0.086	0.010
67	5.58	0.27	0.109	(0.206)	0.098	0.011
68	5.67	0.27	0.109	(0.205)	0.098	0.011
69	5.75	0.27	0.109	(0.204)	0.098	0.011
70	5.83	0.27	0.109	(0.203)	0.098	0.011
71	5.92	0.27	0.109	(0.203)	0.098	0.011
72	6.00	0.27	0.109	(0.202)	0.098	0.011
73	6.08	0.30	0.122	(0.201)	0.110	0.012
74	6.17	0.30	0.122	(0.200)	0.110	0.012
75	6.25	0.30	0.122	(0.199)	0.110	0.012
76	6.33	0.30	0.122	(0.198)	0.110	0.012
77	6.42	0.30	0.122	(0.197)	0.110	0.012
78	6.50	0.30	0.122	(0.196)	0.110	0.012
79	6.58	0.33	0.136	(0.195)	0.122	0.014
80	6.67	0.33	0.136	(0.195)	0.122	0.014
81	6.75	0.33	0.136	(0.194)	0.122	0.014
82	6.83	0.33	0.136	(0.193)	0.122	0.014
83	6.92	0.33	0.136	(0.192)	0.122	0.014
84	7.00	0.33	0.136	(0.191)	0.122	0.014
85	7.08	0.33	0.136	(0.190)	0.122	0.014
86	7.17	0.33	0.136	(0.189)	0.122	0.014
87	7.25	0.33	0.136	(0.188)	0.122	0.014
88	7.33	0.37	0.150	(0.188)	0.135	0.015
89	7.42	0.37	0.150	(0.187)	0.135	0.015
90	7.50	0.37	0.150	(0.186)	0.135	0.015
91	7.58	0.40	0.163	(0.185)	0.147	0.016
92	7.67	0.40	0.163	(0.184)	0.147	0.016
93	7.75	0.40	0.163	(0.183)	0.147	0.016
94	7.83	0.43	0.177	(0.183)	0.159	0.018
95	7.92	0.43	0.177	(0.182)	0.159	0.018
96	8.00	0.43	0.177	(0.181)	0.159	0.018
97	8.08	0.50	0.204	0.180	(0.184)	0.024
98	8.17	0.50	0.204	0.179	(0.184)	0.025
99	8.25	0.50	0.204	0.178	(0.184)	0.026
100	8.33	0.50	0.204	0.177	(0.184)	0.027
101	8.42	0.50	0.204	0.177	(0.184)	0.027
102	8.50	0.50	0.204	0.176	(0.184)	0.028
103	8.58	0.53	0.218	0.175	(0.196)	0.043
104	8.67	0.53	0.218	0.174	(0.196)	0.043
105	8.75	0.53	0.218	0.173	(0.196)	0.044
106	8.83	0.57	0.231	0.173	(0.208)	0.059
107	8.92	0.57	0.231	0.172	(0.208)	0.060

108	9.00	0.57	0.231	0.171	(0.208)	0.060
109	9.08	0.63	0.258	0.170	(0.233)	0.088
110	9.17	0.63	0.258	0.169	(0.233)	0.089
111	9.25	0.63	0.258	0.168	(0.233)	0.090
112	9.33	0.67	0.272	0.168	(0.245)	0.104
113	9.42	0.67	0.272	0.167	(0.245)	0.105
114	9.50	0.67	0.272	0.166	(0.245)	0.106
115	9.58	0.70	0.286	0.165	(0.257)	0.120
116	9.67	0.70	0.286	0.165	(0.257)	0.121
117	9.75	0.70	0.286	0.164	(0.257)	0.122
118	9.83	0.73	0.299	0.163	(0.269)	0.136
119	9.92	0.73	0.299	0.162	(0.269)	0.137
120	10.00	0.73	0.299	0.161	(0.269)	0.138
121	10.08	0.50	0.204	0.161	(0.184)	0.043
122	10.17	0.50	0.204	0.160	(0.184)	0.044
123	10.25	0.50	0.204	0.159	(0.184)	0.045
124	10.33	0.50	0.204	0.158	(0.184)	0.046
125	10.42	0.50	0.204	0.157	(0.184)	0.047
126	10.50	0.50	0.204	0.157	(0.184)	0.047
127	10.58	0.67	0.272	0.156	(0.245)	0.116
128	10.67	0.67	0.272	0.155	(0.245)	0.117
129	10.75	0.67	0.272	0.154	(0.245)	0.118
130	10.83	0.67	0.272	0.154	(0.245)	0.118
131	10.92	0.67	0.272	0.153	(0.245)	0.119
132	11.00	0.67	0.272	0.152	(0.245)	0.120
133	11.08	0.63	0.258	0.151	(0.233)	0.107
134	11.17	0.63	0.258	0.151	(0.233)	0.108
135	11.25	0.63	0.258	0.150	(0.233)	0.109
136	11.33	0.63	0.258	0.149	(0.233)	0.109
137	11.42	0.63	0.258	0.148	(0.233)	0.110
138	11.50	0.63	0.258	0.148	(0.233)	0.111
139	11.58	0.57	0.231	0.147	(0.208)	0.084
140	11.67	0.57	0.231	0.146	(0.208)	0.085
141	11.75	0.57	0.231	0.146	(0.208)	0.086
142	11.83	0.60	0.245	0.145	(0.220)	0.100
143	11.92	0.60	0.245	0.144	(0.220)	0.101
144	12.00	0.60	0.245	0.143	(0.220)	0.102
145	12.08	0.83	0.340	0.143	(0.306)	0.197
146	12.17	0.83	0.340	0.142	(0.306)	0.198
147	12.25	0.83	0.340	0.141	(0.306)	0.199
148	12.33	0.87	0.354	0.141	(0.318)	0.213
149	12.42	0.87	0.354	0.140	(0.318)	0.214
150	12.50	0.87	0.354	0.139	(0.318)	0.215
151	12.58	0.93	0.381	0.138	(0.343)	0.243
152	12.67	0.93	0.381	0.138	(0.343)	0.243
153	12.75	0.93	0.381	0.137	(0.343)	0.244
154	12.83	0.97	0.395	0.136	(0.355)	0.258
155	12.92	0.97	0.395	0.136	(0.355)	0.259
156	13.00	0.97	0.395	0.135	(0.355)	0.260
157	13.08	1.13	0.463	0.134	(0.416)	0.328
158	13.17	1.13	0.463	0.134	(0.416)	0.329
159	13.25	1.13	0.463	0.133	(0.416)	0.330
160	13.33	1.13	0.463	0.132	(0.416)	0.330
161	13.42	1.13	0.463	0.132	(0.416)	0.331

162	13.50	1.13	0.463	0.131	(0.416)	0.332
163	13.58	0.77	0.313	0.130	(0.282)	0.183
164	13.67	0.77	0.313	0.130	(0.282)	0.183
165	13.75	0.77	0.313	0.129	(0.282)	0.184
166	13.83	0.77	0.313	0.128	(0.282)	0.185
167	13.92	0.77	0.313	0.128	(0.282)	0.185
168	14.00	0.77	0.313	0.127	(0.282)	0.186
169	14.08	0.90	0.367	0.126	(0.331)	0.241
170	14.17	0.90	0.367	0.126	(0.331)	0.242
171	14.25	0.90	0.367	0.125	(0.331)	0.242
172	14.33	0.87	0.354	0.124	(0.318)	0.229
173	14.42	0.87	0.354	0.124	(0.318)	0.230
174	14.50	0.87	0.354	0.123	(0.318)	0.231
175	14.58	0.87	0.354	0.122	(0.318)	0.231
176	14.67	0.87	0.354	0.122	(0.318)	0.232
177	14.75	0.87	0.354	0.121	(0.318)	0.233
178	14.83	0.83	0.340	0.121	(0.306)	0.220
179	14.92	0.83	0.340	0.120	(0.306)	0.220
180	15.00	0.83	0.340	0.119	(0.306)	0.221
181	15.08	0.80	0.327	0.119	(0.294)	0.208
182	15.17	0.80	0.327	0.118	(0.294)	0.208
183	15.25	0.80	0.327	0.118	(0.294)	0.209
184	15.33	0.77	0.313	0.117	(0.282)	0.196
185	15.42	0.77	0.313	0.116	(0.282)	0.197
186	15.50	0.77	0.313	0.116	(0.282)	0.197
187	15.58	0.63	0.258	0.115	(0.233)	0.143
188	15.67	0.63	0.258	0.115	(0.233)	0.144
189	15.75	0.63	0.258	0.114	(0.233)	0.145
190	15.83	0.63	0.258	0.113	(0.233)	0.145
191	15.92	0.63	0.258	0.113	(0.233)	0.146
192	16.00	0.63	0.258	0.112	(0.233)	0.146
193	16.08	0.13	0.054	(0.112)	0.049	0.005
194	16.17	0.13	0.054	(0.111)	0.049	0.005
195	16.25	0.13	0.054	(0.110)	0.049	0.005
196	16.33	0.13	0.054	(0.110)	0.049	0.005
197	16.42	0.13	0.054	(0.109)	0.049	0.005
198	16.50	0.13	0.054	(0.109)	0.049	0.005
199	16.58	0.10	0.041	(0.108)	0.037	0.004
200	16.67	0.10	0.041	(0.108)	0.037	0.004
201	16.75	0.10	0.041	(0.107)	0.037	0.004
202	16.83	0.10	0.041	(0.107)	0.037	0.004
203	16.92	0.10	0.041	(0.106)	0.037	0.004
204	17.00	0.10	0.041	(0.106)	0.037	0.004
205	17.08	0.17	0.068	(0.105)	0.061	0.007
206	17.17	0.17	0.068	(0.104)	0.061	0.007
207	17.25	0.17	0.068	(0.104)	0.061	0.007
208	17.33	0.17	0.068	(0.103)	0.061	0.007
209	17.42	0.17	0.068	(0.103)	0.061	0.007
210	17.50	0.17	0.068	(0.102)	0.061	0.007
211	17.58	0.17	0.068	(0.102)	0.061	0.007
212	17.67	0.17	0.068	(0.101)	0.061	0.007
213	17.75	0.17	0.068	(0.101)	0.061	0.007
214	17.83	0.13	0.054	(0.100)	0.049	0.005
215	17.92	0.13	0.054	(0.100)	0.049	0.005

216	18.00	0.13	0.054	(0.099)	0.049	0.005
217	18.08	0.13	0.054	(0.099)	0.049	0.005
218	18.17	0.13	0.054	(0.098)	0.049	0.005
219	18.25	0.13	0.054	(0.098)	0.049	0.005
220	18.33	0.13	0.054	(0.097)	0.049	0.005
221	18.42	0.13	0.054	(0.097)	0.049	0.005
222	18.50	0.13	0.054	(0.097)	0.049	0.005
223	18.58	0.10	0.041	(0.096)	0.037	0.004
224	18.67	0.10	0.041	(0.096)	0.037	0.004
225	18.75	0.10	0.041	(0.095)	0.037	0.004
226	18.83	0.07	0.027	(0.095)	0.024	0.003
227	18.92	0.07	0.027	(0.094)	0.024	0.003
228	19.00	0.07	0.027	(0.094)	0.024	0.003
229	19.08	0.10	0.041	(0.093)	0.037	0.004
230	19.17	0.10	0.041	(0.093)	0.037	0.004
231	19.25	0.10	0.041	(0.092)	0.037	0.004
232	19.33	0.13	0.054	(0.092)	0.049	0.005
233	19.42	0.13	0.054	(0.092)	0.049	0.005
234	19.50	0.13	0.054	(0.091)	0.049	0.005
235	19.58	0.10	0.041	(0.091)	0.037	0.004
236	19.67	0.10	0.041	(0.090)	0.037	0.004
237	19.75	0.10	0.041	(0.090)	0.037	0.004
238	19.83	0.07	0.027	(0.090)	0.024	0.003
239	19.92	0.07	0.027	(0.089)	0.024	0.003
240	20.00	0.07	0.027	(0.089)	0.024	0.003
241	20.08	0.10	0.041	(0.088)	0.037	0.004
242	20.17	0.10	0.041	(0.088)	0.037	0.004
243	20.25	0.10	0.041	(0.088)	0.037	0.004
244	20.33	0.10	0.041	(0.087)	0.037	0.004
245	20.42	0.10	0.041	(0.087)	0.037	0.004
246	20.50	0.10	0.041	(0.086)	0.037	0.004
247	20.58	0.10	0.041	(0.086)	0.037	0.004
248	20.67	0.10	0.041	(0.086)	0.037	0.004
249	20.75	0.10	0.041	(0.085)	0.037	0.004
250	20.83	0.07	0.027	(0.085)	0.024	0.003
251	20.92	0.07	0.027	(0.085)	0.024	0.003
252	21.00	0.07	0.027	(0.084)	0.024	0.003
253	21.08	0.10	0.041	(0.084)	0.037	0.004
254	21.17	0.10	0.041	(0.084)	0.037	0.004
255	21.25	0.10	0.041	(0.083)	0.037	0.004
256	21.33	0.07	0.027	(0.083)	0.024	0.003
257	21.42	0.07	0.027	(0.083)	0.024	0.003
258	21.50	0.07	0.027	(0.082)	0.024	0.003
259	21.58	0.10	0.041	(0.082)	0.037	0.004
260	21.67	0.10	0.041	(0.082)	0.037	0.004
261	21.75	0.10	0.041	(0.082)	0.037	0.004
262	21.83	0.07	0.027	(0.081)	0.024	0.003
263	21.92	0.07	0.027	(0.081)	0.024	0.003
264	22.00	0.07	0.027	(0.081)	0.024	0.003
265	22.08	0.10	0.041	(0.080)	0.037	0.004
266	22.17	0.10	0.041	(0.080)	0.037	0.004
267	22.25	0.10	0.041	(0.080)	0.037	0.004
268	22.33	0.07	0.027	(0.080)	0.024	0.003
269	22.42	0.07	0.027	(0.079)	0.024	0.003

270	22.50	0.07	0.027	(0.079)	0.024	0.003
271	22.58	0.07	0.027	(0.079)	0.024	0.003
272	22.67	0.07	0.027	(0.079)	0.024	0.003
273	22.75	0.07	0.027	(0.079)	0.024	0.003
274	22.83	0.07	0.027	(0.078)	0.024	0.003
275	22.92	0.07	0.027	(0.078)	0.024	0.003
276	23.00	0.07	0.027	(0.078)	0.024	0.003
277	23.08	0.07	0.027	(0.078)	0.024	0.003
278	23.17	0.07	0.027	(0.078)	0.024	0.003
279	23.25	0.07	0.027	(0.077)	0.024	0.003
280	23.33	0.07	0.027	(0.077)	0.024	0.003
281	23.42	0.07	0.027	(0.077)	0.024	0.003
282	23.50	0.07	0.027	(0.077)	0.024	0.003
283	23.58	0.07	0.027	(0.077)	0.024	0.003
284	23.67	0.07	0.027	(0.077)	0.024	0.003
285	23.75	0.07	0.027	(0.077)	0.024	0.003
286	23.83	0.07	0.027	(0.077)	0.024	0.003
287	23.92	0.07	0.027	(0.076)	0.024	0.003
288	24.00	0.07	0.027	(0.076)	0.024	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 15.9

Flood volume = Effective rainfall 1.33(In)
times area 4.2(Ac.)/[(In)/(Ft.)] = 0.5(Ac.Ft)
Total soil loss = 2.07(In)
Total soil loss = 0.731(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 20382.1 Cubic Feet
Total soil loss = 31842.4 Cubic Feet

Peak flow rate of this hydrograph = 1.385(CFS)

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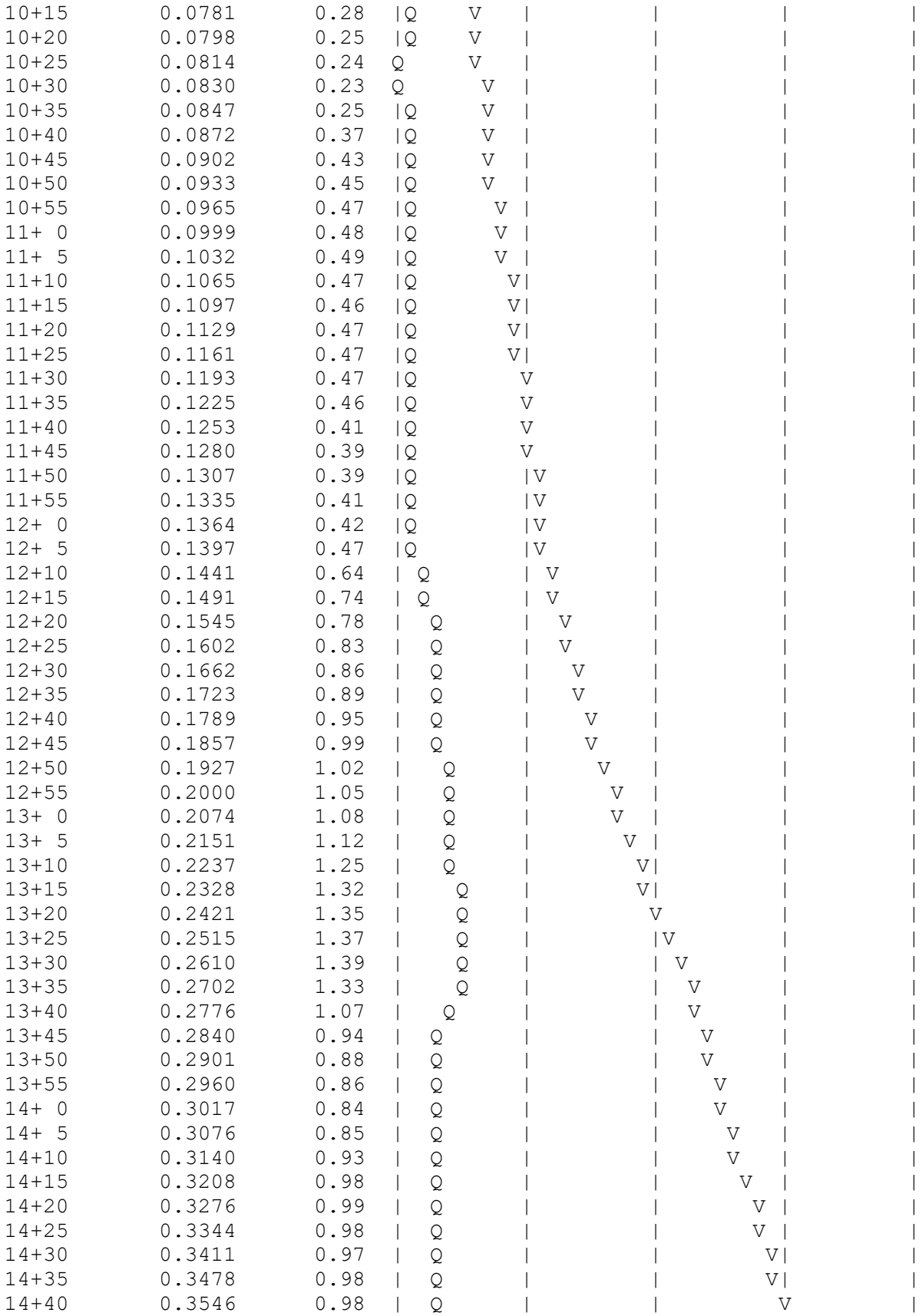
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|
0+20	0.0002	0.01	Q	|	|	|	|
0+25	0.0003	0.01	Q	|	|	|	|
0+30	0.0004	0.02	Q	|	|	|	|
0+35	0.0005	0.02	Q	|	|	|	|
0+40	0.0006	0.02	Q	|	|	|	|
0+45	0.0007	0.02	Q	|	|	|	|
0+50	0.0008	0.02	Q	|	|	|	|
0+55	0.0010	0.02	Q	|	|	|	|
1+ 0	0.0011	0.02	Q	|	|	|	|
1+ 5	0.0013	0.02	Q	|	|	|	|
1+10	0.0014	0.02	Q	|	|	|	|

1+15	0.0015	0.02	Q				
1+20	0.0017	0.02	Q				
1+25	0.0018	0.02	Q				
1+30	0.0019	0.02	Q				
1+35	0.0020	0.02	Q				
1+40	0.0021	0.02	Q				
1+45	0.0023	0.02	Q				
1+50	0.0024	0.02	Q				
1+55	0.0025	0.02	Q				
2+ 0	0.0027	0.02	Q				
2+ 5	0.0028	0.02	Q				
2+10	0.0030	0.02	Q				
2+15	0.0031	0.02	Q				
2+20	0.0033	0.02	Q				
2+25	0.0035	0.02	Q				
2+30	0.0036	0.02	Q				
2+35	0.0038	0.02	Q				
2+40	0.0040	0.03	Q				
2+45	0.0042	0.03	Q				
2+50	0.0043	0.03	Q				
2+55	0.0045	0.03	Q				
3+ 0	0.0047	0.03	Q				
3+ 5	0.0049	0.03	Q				
3+10	0.0051	0.03	Q				
3+15	0.0053	0.03	Q				
3+20	0.0055	0.03	Q				
3+25	0.0057	0.03	Q				
3+30	0.0059	0.03	Q				
3+35	0.0061	0.03	Q				
3+40	0.0063	0.03	Q				
3+45	0.0065	0.03	Q				
3+50	0.0067	0.03	Q				
3+55	0.0070	0.03	Q				
4+ 0	0.0072	0.03	Q				
4+ 5	0.0074	0.03	Q				
4+10	0.0077	0.03	Q				
4+15	0.0079	0.03	Q				
4+20	0.0081	0.04	Q				
4+25	0.0084	0.04	Q				
4+30	0.0087	0.04	Q				
4+35	0.0089	0.04	Q				
4+40	0.0092	0.04	Q				
4+45	0.0095	0.04	Q				
4+50	0.0098	0.04	Q				
4+55	0.0101	0.04	Q				
5+ 0	0.0104	0.04	Q				
5+ 5	0.0107	0.04	Q				
5+10	0.0110	0.04	Q				
5+15	0.0112	0.04	Q				
5+20	0.0115	0.04	Q				
5+25	0.0117	0.04	QV				
5+30	0.0120	0.04	QV				
5+35	0.0123	0.04	QV				
5+40	0.0126	0.04	QV				

5+45	0.0129	0.04	QV				
5+50	0.0132	0.05	QV				
5+55	0.0135	0.05	QV				
6+ 0	0.0138	0.05	QV				
6+ 5	0.0142	0.05	QV				
6+10	0.0145	0.05	QV				
6+15	0.0148	0.05	QV				
6+20	0.0152	0.05	QV				
6+25	0.0156	0.05	QV				
6+30	0.0159	0.05	QV				
6+35	0.0163	0.05	QV				
6+40	0.0167	0.06	QV				
6+45	0.0170	0.06	QV				
6+50	0.0174	0.06	QV				
6+55	0.0178	0.06	QV				
7+ 0	0.0182	0.06	QV				
7+ 5	0.0186	0.06	QV				
7+10	0.0190	0.06	QV				
7+15	0.0194	0.06	QV				
7+20	0.0198	0.06	QV				
7+25	0.0202	0.06	QV				
7+30	0.0207	0.06	QV				
7+35	0.0211	0.06	QV				
7+40	0.0216	0.07	QV				
7+45	0.0220	0.07	QV				
7+50	0.0225	0.07	QV				
7+55	0.0230	0.07	QV				
8+ 0	0.0235	0.07	Q V				
8+ 5	0.0240	0.08	Q V				
8+10	0.0246	0.09	Q V				
8+15	0.0253	0.10	Q V				
8+20	0.0260	0.10	Q V				
8+25	0.0268	0.11	Q V				
8+30	0.0275	0.11	Q V				
8+35	0.0284	0.12	Q V				
8+40	0.0294	0.15	Q V				
8+45	0.0305	0.17	Q V				
8+50	0.0318	0.18	Q V				
8+55	0.0333	0.21	Q V				
9+ 0	0.0348	0.23	Q V				
9+ 5	0.0366	0.25	|Q V				
9+10	0.0387	0.31	|Q V				
9+15	0.0411	0.34	|Q V				
9+20	0.0436	0.36	|Q V				
9+25	0.0463	0.40	|Q V				
9+30	0.0492	0.42	|Q V				
9+35	0.0522	0.44	|Q V				
9+40	0.0555	0.47	|Q V				
9+45	0.0588	0.49	|Q V				
9+50	0.0623	0.51	| Q V				
9+55	0.0661	0.54	| Q V				
10+ 0	0.0699	0.56	| Q V				
10+ 5	0.0736	0.53	| Q V				
10+10	0.0761	0.37	|Q V				



14+45	0.3614	0.99	| Q	|	|	V |
14+50	0.3682	0.98	| Q	|	|	|V |
14+55	0.3748	0.96	| Q	|	|	| V |
15+ 0	0.3813	0.95	| Q	|	|	| V |
15+ 5	0.3878	0.94	| Q	|	|	| V |
15+10	0.3942	0.92	| Q	|	|	| V |
15+15	0.4004	0.91	| Q	|	|	| V |
15+20	0.4066	0.89	| Q	|	|	| V |
15+25	0.4125	0.87	| Q	|	|	| V |
15+30	0.4184	0.86	| Q	|	|	| V |
15+35	0.4241	0.83	| Q	|	|	| V |
15+40	0.4292	0.73	| Q	|	|	| V |
15+45	0.4338	0.68	| Q	|	|	| V |
15+50	0.4383	0.66	| Q	|	|	| V |
15+55	0.4428	0.64	| Q	|	|	| V |
16+ 0	0.4472	0.64	| Q	|	|	| V |
16+ 5	0.4511	0.57	| Q	|	|	| V |
16+10	0.4533	0.32	|Q	|	|	| V |
16+15	0.4545	0.18	Q	|	|	| V |
16+20	0.4554	0.13	Q	|	|	| V |
16+25	0.4560	0.09	Q	|	|	| V |
16+30	0.4565	0.07	Q	|	|	| V|
16+35	0.4569	0.05	Q	|	|	| V|
16+40	0.4572	0.04	Q	|	|	| V|
16+45	0.4574	0.03	Q	|	|	| V|
16+50	0.4576	0.03	Q	|	|	| V|
16+55	0.4577	0.02	Q	|	|	| V|
17+ 0	0.4578	0.02	Q	|	|	| V|
17+ 5	0.4580	0.02	Q	|	|	| V|
17+10	0.4581	0.02	Q	|	|	| V|
17+15	0.4583	0.03	Q	|	|	| V|
17+20	0.4585	0.03	Q	|	|	| V|
17+25	0.4587	0.03	Q	|	|	| V|
17+30	0.4589	0.03	Q	|	|	| V|
17+35	0.4591	0.03	Q	|	|	| V|
17+40	0.4593	0.03	Q	|	|	| V|
17+45	0.4595	0.03	Q	|	|	| V|
17+50	0.4596	0.03	Q	|	|	| V|
17+55	0.4598	0.03	Q	|	|	| V|
18+ 0	0.4600	0.02	Q	|	|	| V|
18+ 5	0.4602	0.02	Q	|	|	| V|
18+10	0.4603	0.02	Q	|	|	| V|
18+15	0.4605	0.02	Q	|	|	| V|
18+20	0.4607	0.02	Q	|	|	| V|
18+25	0.4608	0.02	Q	|	|	| V|
18+30	0.4610	0.02	Q	|	|	| V|
18+35	0.4611	0.02	Q	|	|	| V|
18+40	0.4613	0.02	Q	|	|	| V|
18+45	0.4614	0.02	Q	|	|	| V|
18+50	0.4615	0.02	Q	|	|	| V|
18+55	0.4616	0.02	Q	|	|	| V|
19+ 0	0.4617	0.01	Q	|	|	| V|
19+ 5	0.4618	0.01	Q	|	|	| V|
19+10	0.4619	0.02	Q	|	|	| V|

19+15	0.4620	0.02	Q	|	|	|	V|
19+20	0.4622	0.02	Q	|	|	|	V|
19+25	0.4623	0.02	Q	|	|	|	V|
19+30	0.4624	0.02	Q	|	|	|	V|
19+35	0.4626	0.02	Q	|	|	|	V|
19+40	0.4627	0.02	Q	|	|	|	V|
19+45	0.4628	0.02	Q	|	|	|	V|
19+50	0.4630	0.02	Q	|	|	|	V|
19+55	0.4631	0.01	Q	|	|	|	V|
20+ 0	0.4632	0.01	Q	|	|	|	V|
20+ 5	0.4633	0.01	Q	|	|	|	V|
20+10	0.4634	0.02	Q	|	|	|	V|
20+15	0.4635	0.02	Q	|	|	|	V|
20+20	0.4636	0.02	Q	|	|	|	V|
20+25	0.4637	0.02	Q	|	|	|	V|
20+30	0.4638	0.02	Q	|	|	|	V|
20+35	0.4639	0.02	Q	|	|	|	V|
20+40	0.4641	0.02	Q	|	|	|	V|
20+45	0.4642	0.02	Q	|	|	|	V|
20+50	0.4643	0.02	Q	|	|	|	V|
20+55	0.4644	0.01	Q	|	|	|	V|
21+ 0	0.4645	0.01	Q	|	|	|	V|
21+ 5	0.4646	0.01	Q	|	|	|	V|
21+10	0.4647	0.02	Q	|	|	|	V|
21+15	0.4648	0.02	Q	|	|	|	V|
21+20	0.4649	0.02	Q	|	|	|	V|
21+25	0.4650	0.01	Q	|	|	|	V|
21+30	0.4651	0.01	Q	|	|	|	V|
21+35	0.4652	0.01	Q	|	|	|	V|
21+40	0.4653	0.02	Q	|	|	|	V|
21+45	0.4654	0.02	Q	|	|	|	V|
21+50	0.4655	0.02	Q	|	|	|	V|
21+55	0.4656	0.01	Q	|	|	|	V|
22+ 0	0.4657	0.01	Q	|	|	|	V|
22+ 5	0.4658	0.01	Q	|	|	|	V|
22+10	0.4659	0.02	Q	|	|	|	V|
22+15	0.4660	0.02	Q	|	|	|	V|
22+20	0.4661	0.02	Q	|	|	|	V|
22+25	0.4662	0.01	Q	|	|	|	V|
22+30	0.4663	0.01	Q	|	|	|	V|
22+35	0.4664	0.01	Q	|	|	|	V|
22+40	0.4665	0.01	Q	|	|	|	V|
22+45	0.4665	0.01	Q	|	|	|	V|
22+50	0.4666	0.01	Q	|	|	|	V|
22+55	0.4667	0.01	Q	|	|	|	V|
23+ 0	0.4668	0.01	Q	|	|	|	V|
23+ 5	0.4669	0.01	Q	|	|	|	V|
23+10	0.4669	0.01	Q	|	|	|	V|
23+15	0.4670	0.01	Q	|	|	|	V|
23+20	0.4671	0.01	Q	|	|	|	V|
23+25	0.4672	0.01	Q	|	|	|	V|
23+30	0.4673	0.01	Q	|	|	|	V|
23+35	0.4673	0.01	Q	|	|	|	V|
23+40	0.4674	0.01	Q	|	|	|	V|

23+45	0.4675	0.01	Q	|	|	|	V|
23+50	0.4676	0.01	Q	|	|	|	V|
23+55	0.4677	0.01	Q	|	|	|	V|
24+ 0	0.4677	0.01	Q	|	|	|	V|
24+ 5	0.4678	0.01	Q	|	|	|	V|
24+10	0.4678	0.01	Q	|	|	|	V|
24+15	0.4679	0.00	Q	|	|	|	V|
24+20	0.4679	0.00	Q	|	|	|	V|
24+25	0.4679	0.00	Q	|	|	|	V|
24+30	0.4679	0.00	Q	|	|	|	V|
24+35	0.4679	0.00	Q	|	|	|	V|
24+40	0.4679	0.00	Q	|	|	|	V|
24+45	0.4679	0.00	Q	|	|	|	V|
24+50	0.4679	0.00	Q	|	|	|	V|
24+55	0.4679	0.00	Q	|	|	|	V|

APPENDIX D

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (UNIT HYDROGRAPH)

APPENDIX D.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

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 11/09/23 File: 10A12410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0008 GOETZ MENIFEE
10-YEAR, 24-HOUR STORM EVENT
POST DEVELOPMENT
A1

Drainage Area = 7.93(Ac.) = 0.012 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 7.93(Ac.) = 0.012 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.122 Hr.
Lag time = 7.34 Min.
25% of lag time = 1.84 Min.
40% of lag time = 2.94 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]
7.93	2.06	16.34

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
7.93	5.32	42.19

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.401(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 3.401(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
7.930	69.00	0.860

Total Area Entered = 7.93(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.860	0.084	1.000	0.084
					Sum (F) =	0.084

Area averaged mean soil loss (F) (In/Hr) = 0.084
Minimum soil loss rate ((In/Hr)) = 0.042
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.220

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	68.083	10.141	0.810
2	0.167	136.166	39.073	3.123
3	0.250	204.248	23.812	1.903
4	0.333	272.331	9.197	0.735
5	0.417	340.414	5.592	0.447
6	0.500	408.497	3.745	0.299
7	0.583	476.580	2.492	0.199
8	0.667	544.662	1.951	0.156
9	0.750	612.745	1.410	0.113
10	0.833	680.828	1.016	0.081
11	0.917	748.911	0.722	0.058
12	1.000	816.993	0.851	0.068
		Sum =	100.000 Sum=	7.992

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1 0.08	0.07	0.027	(0.149)	0.006	0.021
2 0.17	0.07	0.027	(0.149)	0.006	0.021
3 0.25	0.07	0.027	(0.148)	0.006	0.021
4 0.33	0.10	0.041	(0.148)	0.009	0.032
5 0.42	0.10	0.041	(0.147)	0.009	0.032
6 0.50	0.10	0.041	(0.146)	0.009	0.032
7 0.58	0.10	0.041	(0.146)	0.009	0.032
8 0.67	0.10	0.041	(0.145)	0.009	0.032
9 0.75	0.10	0.041	(0.145)	0.009	0.032
10 0.83	0.13	0.054	(0.144)	0.012	0.042
11 0.92	0.13	0.054	(0.144)	0.012	0.042
12 1.00	0.13	0.054	(0.143)	0.012	0.042
13 1.08	0.10	0.041	(0.142)	0.009	0.032

14	1.17	0.10	0.041	(0.142)	0.009	0.032
15	1.25	0.10	0.041	(0.141)	0.009	0.032
16	1.33	0.10	0.041	(0.141)	0.009	0.032
17	1.42	0.10	0.041	(0.140)	0.009	0.032
18	1.50	0.10	0.041	(0.140)	0.009	0.032
19	1.58	0.10	0.041	(0.139)	0.009	0.032
20	1.67	0.10	0.041	(0.139)	0.009	0.032
21	1.75	0.10	0.041	(0.138)	0.009	0.032
22	1.83	0.13	0.054	(0.137)	0.012	0.042
23	1.92	0.13	0.054	(0.137)	0.012	0.042
24	2.00	0.13	0.054	(0.136)	0.012	0.042
25	2.08	0.13	0.054	(0.136)	0.012	0.042
26	2.17	0.13	0.054	(0.135)	0.012	0.042
27	2.25	0.13	0.054	(0.135)	0.012	0.042
28	2.33	0.13	0.054	(0.134)	0.012	0.042
29	2.42	0.13	0.054	(0.134)	0.012	0.042
30	2.50	0.13	0.054	(0.133)	0.012	0.042
31	2.58	0.17	0.068	(0.133)	0.015	0.053
32	2.67	0.17	0.068	(0.132)	0.015	0.053
33	2.75	0.17	0.068	(0.131)	0.015	0.053
34	2.83	0.17	0.068	(0.131)	0.015	0.053
35	2.92	0.17	0.068	(0.130)	0.015	0.053
36	3.00	0.17	0.068	(0.130)	0.015	0.053
37	3.08	0.17	0.068	(0.129)	0.015	0.053
38	3.17	0.17	0.068	(0.129)	0.015	0.053
39	3.25	0.17	0.068	(0.128)	0.015	0.053
40	3.33	0.17	0.068	(0.128)	0.015	0.053
41	3.42	0.17	0.068	(0.127)	0.015	0.053
42	3.50	0.17	0.068	(0.127)	0.015	0.053
43	3.58	0.17	0.068	(0.126)	0.015	0.053
44	3.67	0.17	0.068	(0.126)	0.015	0.053
45	3.75	0.17	0.068	(0.125)	0.015	0.053
46	3.83	0.20	0.082	(0.124)	0.018	0.064
47	3.92	0.20	0.082	(0.124)	0.018	0.064
48	4.00	0.20	0.082	(0.123)	0.018	0.064
49	4.08	0.20	0.082	(0.123)	0.018	0.064
50	4.17	0.20	0.082	(0.122)	0.018	0.064
51	4.25	0.20	0.082	(0.122)	0.018	0.064
52	4.33	0.23	0.095	(0.121)	0.021	0.074
53	4.42	0.23	0.095	(0.121)	0.021	0.074
54	4.50	0.23	0.095	(0.120)	0.021	0.074
55	4.58	0.23	0.095	(0.120)	0.021	0.074
56	4.67	0.23	0.095	(0.119)	0.021	0.074
57	4.75	0.23	0.095	(0.119)	0.021	0.074
58	4.83	0.27	0.109	(0.118)	0.024	0.085
59	4.92	0.27	0.109	(0.118)	0.024	0.085
60	5.00	0.27	0.109	(0.117)	0.024	0.085
61	5.08	0.20	0.082	(0.117)	0.018	0.064
62	5.17	0.20	0.082	(0.116)	0.018	0.064
63	5.25	0.20	0.082	(0.116)	0.018	0.064
64	5.33	0.23	0.095	(0.115)	0.021	0.074
65	5.42	0.23	0.095	(0.115)	0.021	0.074
66	5.50	0.23	0.095	(0.114)	0.021	0.074
67	5.58	0.27	0.109	(0.114)	0.024	0.085
68	5.67	0.27	0.109	(0.113)	0.024	0.085
69	5.75	0.27	0.109	(0.113)	0.024	0.085
70	5.83	0.27	0.109	(0.112)	0.024	0.085
71	5.92	0.27	0.109	(0.112)	0.024	0.085
72	6.00	0.27	0.109	(0.111)	0.024	0.085
73	6.08	0.30	0.122	(0.111)	0.027	0.096

74	6.17	0.30	0.122	(0.110)	0.027	0.096
75	6.25	0.30	0.122	(0.110)	0.027	0.096
76	6.33	0.30	0.122	(0.109)	0.027	0.096
77	6.42	0.30	0.122	(0.109)	0.027	0.096
78	6.50	0.30	0.122	(0.108)	0.027	0.096
79	6.58	0.33	0.136	(0.108)	0.030	0.106
80	6.67	0.33	0.136	(0.107)	0.030	0.106
81	6.75	0.33	0.136	(0.107)	0.030	0.106
82	6.83	0.33	0.136	(0.106)	0.030	0.106
83	6.92	0.33	0.136	(0.106)	0.030	0.106
84	7.00	0.33	0.136	(0.105)	0.030	0.106
85	7.08	0.33	0.136	(0.105)	0.030	0.106
86	7.17	0.33	0.136	(0.104)	0.030	0.106
87	7.25	0.33	0.136	(0.104)	0.030	0.106
88	7.33	0.37	0.150	(0.103)	0.033	0.117
89	7.42	0.37	0.150	(0.103)	0.033	0.117
90	7.50	0.37	0.150	(0.103)	0.033	0.117
91	7.58	0.40	0.163	(0.102)	0.036	0.127
92	7.67	0.40	0.163	(0.102)	0.036	0.127
93	7.75	0.40	0.163	(0.101)	0.036	0.127
94	7.83	0.43	0.177	(0.101)	0.039	0.138
95	7.92	0.43	0.177	(0.100)	0.039	0.138
96	8.00	0.43	0.177	(0.100)	0.039	0.138
97	8.08	0.50	0.204	(0.099)	0.045	0.159
98	8.17	0.50	0.204	(0.099)	0.045	0.159
99	8.25	0.50	0.204	(0.098)	0.045	0.159
100	8.33	0.50	0.204	(0.098)	0.045	0.159
101	8.42	0.50	0.204	(0.097)	0.045	0.159
102	8.50	0.50	0.204	(0.097)	0.045	0.159
103	8.58	0.53	0.218	(0.096)	0.048	0.170
104	8.67	0.53	0.218	(0.096)	0.048	0.170
105	8.75	0.53	0.218	(0.096)	0.048	0.170
106	8.83	0.57	0.231	(0.095)	0.051	0.180
107	8.92	0.57	0.231	(0.095)	0.051	0.180
108	9.00	0.57	0.231	(0.094)	0.051	0.180
109	9.08	0.63	0.258	(0.094)	0.057	0.202
110	9.17	0.63	0.258	(0.093)	0.057	0.202
111	9.25	0.63	0.258	(0.093)	0.057	0.202
112	9.33	0.67	0.272	(0.092)	0.060	0.212
113	9.42	0.67	0.272	(0.092)	0.060	0.212
114	9.50	0.67	0.272	(0.092)	0.060	0.212
115	9.58	0.70	0.286	(0.091)	0.063	0.223
116	9.67	0.70	0.286	(0.091)	0.063	0.223
117	9.75	0.70	0.286	(0.090)	0.063	0.223
118	9.83	0.73	0.299	(0.090)	0.066	0.233
119	9.92	0.73	0.299	(0.089)	0.066	0.233
120	10.00	0.73	0.299	(0.089)	0.066	0.233
121	10.08	0.50	0.204	(0.089)	0.045	0.159
122	10.17	0.50	0.204	(0.088)	0.045	0.159
123	10.25	0.50	0.204	(0.088)	0.045	0.159
124	10.33	0.50	0.204	(0.087)	0.045	0.159
125	10.42	0.50	0.204	(0.087)	0.045	0.159
126	10.50	0.50	0.204	(0.086)	0.045	0.159
127	10.58	0.67	0.272	(0.086)	0.060	0.212
128	10.67	0.67	0.272	(0.086)	0.060	0.212
129	10.75	0.67	0.272	(0.085)	0.060	0.212
130	10.83	0.67	0.272	(0.085)	0.060	0.212
131	10.92	0.67	0.272	(0.084)	0.060	0.212
132	11.00	0.67	0.272	(0.084)	0.060	0.212
133	11.08	0.63	0.258	(0.083)	0.057	0.202

134	11.17	0.63	0.258	(0.083)	0.057	0.202
135	11.25	0.63	0.258	(0.083)	0.057	0.202
136	11.33	0.63	0.258	(0.082)	0.057	0.202
137	11.42	0.63	0.258	(0.082)	0.057	0.202
138	11.50	0.63	0.258	(0.081)	0.057	0.202
139	11.58	0.57	0.231	(0.081)	0.051	0.180
140	11.67	0.57	0.231	(0.081)	0.051	0.180
141	11.75	0.57	0.231	(0.080)	0.051	0.180
142	11.83	0.60	0.245	(0.080)	0.054	0.191
143	11.92	0.60	0.245	(0.079)	0.054	0.191
144	12.00	0.60	0.245	(0.079)	0.054	0.191
145	12.08	0.83	0.340	(0.079)	0.075	0.265
146	12.17	0.83	0.340	(0.078)	0.075	0.265
147	12.25	0.83	0.340	(0.078)	0.075	0.265
148	12.33	0.87	0.354	0.077	(0.078)	0.276
149	12.42	0.87	0.354	0.077	(0.078)	0.277
150	12.50	0.87	0.354	0.077	(0.078)	0.277
151	12.58	0.93	0.381	0.076	(0.084)	0.305
152	12.67	0.93	0.381	0.076	(0.084)	0.305
153	12.75	0.93	0.381	0.076	(0.084)	0.305
154	12.83	0.97	0.395	0.075	(0.087)	0.319
155	12.92	0.97	0.395	0.075	(0.087)	0.320
156	13.00	0.97	0.395	0.074	(0.087)	0.320
157	13.08	1.13	0.463	0.074	(0.102)	0.389
158	13.17	1.13	0.463	0.074	(0.102)	0.389
159	13.25	1.13	0.463	0.073	(0.102)	0.389
160	13.33	1.13	0.463	0.073	(0.102)	0.390
161	13.42	1.13	0.463	0.073	(0.102)	0.390
162	13.50	1.13	0.463	0.072	(0.102)	0.390
163	13.58	0.77	0.313	(0.072)	0.069	0.244
164	13.67	0.77	0.313	(0.071)	0.069	0.244
165	13.75	0.77	0.313	(0.071)	0.069	0.244
166	13.83	0.77	0.313	(0.071)	0.069	0.244
167	13.92	0.77	0.313	(0.070)	0.069	0.244
168	14.00	0.77	0.313	(0.070)	0.069	0.244
169	14.08	0.90	0.367	0.070	(0.081)	0.298
170	14.17	0.90	0.367	0.069	(0.081)	0.298
171	14.25	0.90	0.367	0.069	(0.081)	0.298
172	14.33	0.87	0.354	0.069	(0.078)	0.285
173	14.42	0.87	0.354	0.068	(0.078)	0.286
174	14.50	0.87	0.354	0.068	(0.078)	0.286
175	14.58	0.87	0.354	0.068	(0.078)	0.286
176	14.67	0.87	0.354	0.067	(0.078)	0.287
177	14.75	0.87	0.354	0.067	(0.078)	0.287
178	14.83	0.83	0.340	0.066	(0.075)	0.274
179	14.92	0.83	0.340	0.066	(0.075)	0.274
180	15.00	0.83	0.340	0.066	(0.075)	0.274
181	15.08	0.80	0.327	0.065	(0.072)	0.261
182	15.17	0.80	0.327	0.065	(0.072)	0.261
183	15.25	0.80	0.327	0.065	(0.072)	0.262
184	15.33	0.77	0.313	0.064	(0.069)	0.248
185	15.42	0.77	0.313	0.064	(0.069)	0.249
186	15.50	0.77	0.313	0.064	(0.069)	0.249
187	15.58	0.63	0.258	(0.063)	0.057	0.202
188	15.67	0.63	0.258	(0.063)	0.057	0.202
189	15.75	0.63	0.258	(0.063)	0.057	0.202
190	15.83	0.63	0.258	(0.063)	0.057	0.202
191	15.92	0.63	0.258	(0.062)	0.057	0.202
192	16.00	0.63	0.258	(0.062)	0.057	0.202
193	16.08	0.13	0.054	(0.062)	0.012	0.042

194	16.17	0.13	0.054	(0.061)	0.012	0.042
195	16.25	0.13	0.054	(0.061)	0.012	0.042
196	16.33	0.13	0.054	(0.061)	0.012	0.042
197	16.42	0.13	0.054	(0.060)	0.012	0.042
198	16.50	0.13	0.054	(0.060)	0.012	0.042
199	16.58	0.10	0.041	(0.060)	0.009	0.032
200	16.67	0.10	0.041	(0.059)	0.009	0.032
201	16.75	0.10	0.041	(0.059)	0.009	0.032
202	16.83	0.10	0.041	(0.059)	0.009	0.032
203	16.92	0.10	0.041	(0.058)	0.009	0.032
204	17.00	0.10	0.041	(0.058)	0.009	0.032
205	17.08	0.17	0.068	(0.058)	0.015	0.053
206	17.17	0.17	0.068	(0.058)	0.015	0.053
207	17.25	0.17	0.068	(0.057)	0.015	0.053
208	17.33	0.17	0.068	(0.057)	0.015	0.053
209	17.42	0.17	0.068	(0.057)	0.015	0.053
210	17.50	0.17	0.068	(0.056)	0.015	0.053
211	17.58	0.17	0.068	(0.056)	0.015	0.053
212	17.67	0.17	0.068	(0.056)	0.015	0.053
213	17.75	0.17	0.068	(0.056)	0.015	0.053
214	17.83	0.13	0.054	(0.055)	0.012	0.042
215	17.92	0.13	0.054	(0.055)	0.012	0.042
216	18.00	0.13	0.054	(0.055)	0.012	0.042
217	18.08	0.13	0.054	(0.055)	0.012	0.042
218	18.17	0.13	0.054	(0.054)	0.012	0.042
219	18.25	0.13	0.054	(0.054)	0.012	0.042
220	18.33	0.13	0.054	(0.054)	0.012	0.042
221	18.42	0.13	0.054	(0.053)	0.012	0.042
222	18.50	0.13	0.054	(0.053)	0.012	0.042
223	18.58	0.10	0.041	(0.053)	0.009	0.032
224	18.67	0.10	0.041	(0.053)	0.009	0.032
225	18.75	0.10	0.041	(0.052)	0.009	0.032
226	18.83	0.07	0.027	(0.052)	0.006	0.021
227	18.92	0.07	0.027	(0.052)	0.006	0.021
228	19.00	0.07	0.027	(0.052)	0.006	0.021
229	19.08	0.10	0.041	(0.051)	0.009	0.032
230	19.17	0.10	0.041	(0.051)	0.009	0.032
231	19.25	0.10	0.041	(0.051)	0.009	0.032
232	19.33	0.13	0.054	(0.051)	0.012	0.042
233	19.42	0.13	0.054	(0.051)	0.012	0.042
234	19.50	0.13	0.054	(0.050)	0.012	0.042
235	19.58	0.10	0.041	(0.050)	0.009	0.032
236	19.67	0.10	0.041	(0.050)	0.009	0.032
237	19.75	0.10	0.041	(0.050)	0.009	0.032
238	19.83	0.07	0.027	(0.049)	0.006	0.021
239	19.92	0.07	0.027	(0.049)	0.006	0.021
240	20.00	0.07	0.027	(0.049)	0.006	0.021
241	20.08	0.10	0.041	(0.049)	0.009	0.032
242	20.17	0.10	0.041	(0.048)	0.009	0.032
243	20.25	0.10	0.041	(0.048)	0.009	0.032
244	20.33	0.10	0.041	(0.048)	0.009	0.032
245	20.42	0.10	0.041	(0.048)	0.009	0.032
246	20.50	0.10	0.041	(0.048)	0.009	0.032
247	20.58	0.10	0.041	(0.047)	0.009	0.032
248	20.67	0.10	0.041	(0.047)	0.009	0.032
249	20.75	0.10	0.041	(0.047)	0.009	0.032
250	20.83	0.07	0.027	(0.047)	0.006	0.021
251	20.92	0.07	0.027	(0.047)	0.006	0.021
252	21.00	0.07	0.027	(0.047)	0.006	0.021
253	21.08	0.10	0.041	(0.046)	0.009	0.032

254	21.17	0.10	0.041	(0.046)	0.009	0.032
255	21.25	0.10	0.041	(0.046)	0.009	0.032
256	21.33	0.07	0.027	(0.046)	0.006	0.021
257	21.42	0.07	0.027	(0.046)	0.006	0.021
258	21.50	0.07	0.027	(0.045)	0.006	0.021
259	21.58	0.10	0.041	(0.045)	0.009	0.032
260	21.67	0.10	0.041	(0.045)	0.009	0.032
261	21.75	0.10	0.041	(0.045)	0.009	0.032
262	21.83	0.07	0.027	(0.045)	0.006	0.021
263	21.92	0.07	0.027	(0.045)	0.006	0.021
264	22.00	0.07	0.027	(0.044)	0.006	0.021
265	22.08	0.10	0.041	(0.044)	0.009	0.032
266	22.17	0.10	0.041	(0.044)	0.009	0.032
267	22.25	0.10	0.041	(0.044)	0.009	0.032
268	22.33	0.07	0.027	(0.044)	0.006	0.021
269	22.42	0.07	0.027	(0.044)	0.006	0.021
270	22.50	0.07	0.027	(0.044)	0.006	0.021
271	22.58	0.07	0.027	(0.044)	0.006	0.021
272	22.67	0.07	0.027	(0.043)	0.006	0.021
273	22.75	0.07	0.027	(0.043)	0.006	0.021
274	22.83	0.07	0.027	(0.043)	0.006	0.021
275	22.92	0.07	0.027	(0.043)	0.006	0.021
276	23.00	0.07	0.027	(0.043)	0.006	0.021
277	23.08	0.07	0.027	(0.043)	0.006	0.021
278	23.17	0.07	0.027	(0.043)	0.006	0.021
279	23.25	0.07	0.027	(0.043)	0.006	0.021
280	23.33	0.07	0.027	(0.043)	0.006	0.021
281	23.42	0.07	0.027	(0.043)	0.006	0.021
282	23.50	0.07	0.027	(0.042)	0.006	0.021
283	23.58	0.07	0.027	(0.042)	0.006	0.021
284	23.67	0.07	0.027	(0.042)	0.006	0.021
285	23.75	0.07	0.027	(0.042)	0.006	0.021
286	23.83	0.07	0.027	(0.042)	0.006	0.021
287	23.92	0.07	0.027	(0.042)	0.006	0.021
288	24.00	0.07	0.027	(0.042)	0.006	0.021

(Loss Rate Not Used)

Sum = 100.0 Sum = 32.2

Flood volume = Effective rainfall 2.69(In)
times area 7.9(Ac.)/[(In)/(Ft.)] = 1.8(Ac.Ft)
Total soil loss = 0.72(In)
Total soil loss = 0.473(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 77300.2 Cubic Feet
Total soil loss = 20604.6 Cubic Feet

Peak flow rate of this hydrograph = 3.066(CFS)

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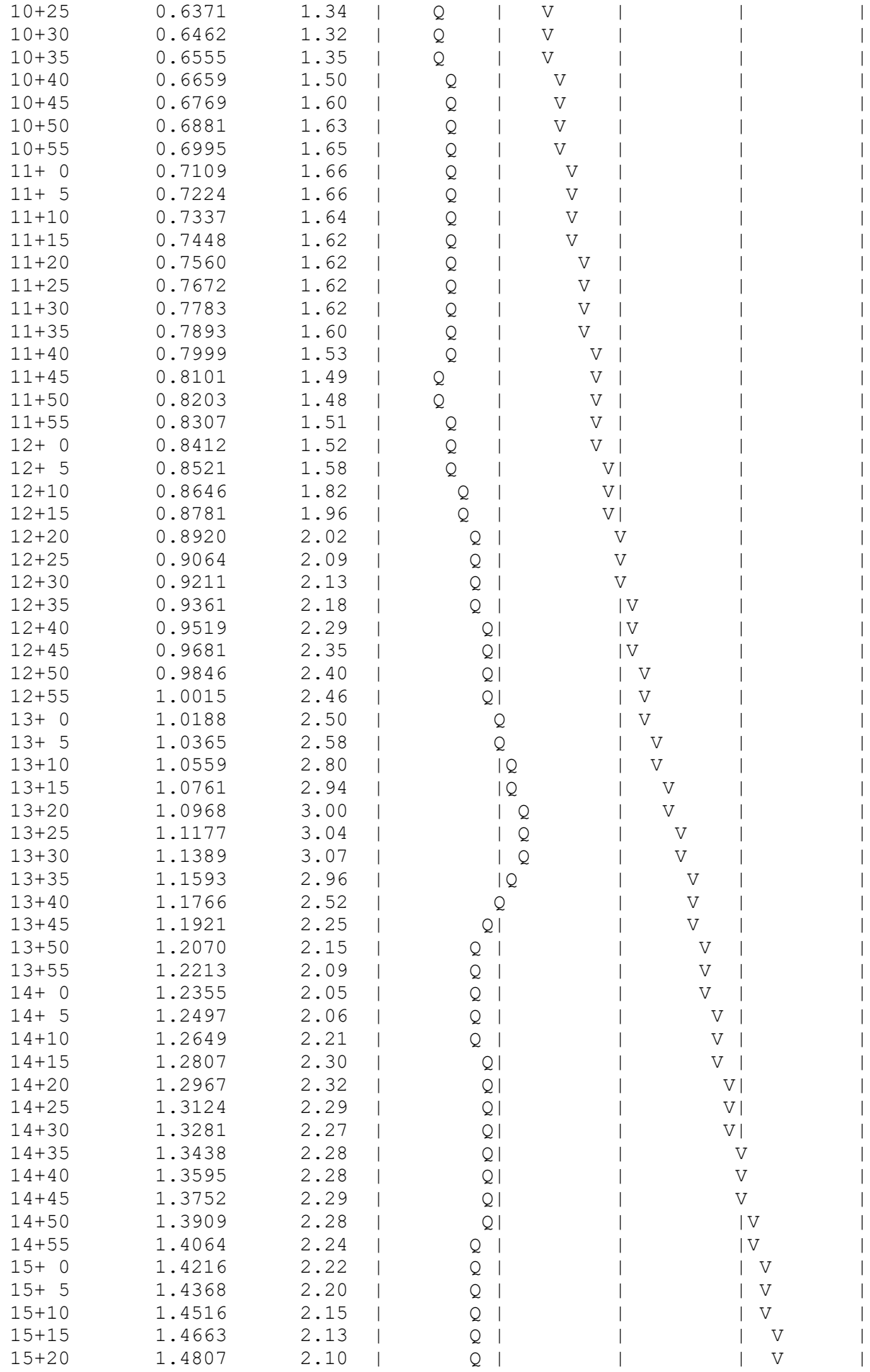
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0001	0.02	Q	|	|	|	|
0+10	0.0007	0.08	Q	|	|	|	|
0+15	0.0015	0.12	Q	|	|	|	|
0+20	0.0026	0.15	Q	|	|	|	|

0+25	0.0039	0.19	Q	|	|	|	|
0+30	0.0054	0.22	Q	|	|	|	|
0+35	0.0070	0.23	Q	|	|	|	|
0+40	0.0086	0.24	Q	|	|	|	|
0+45	0.0103	0.24	Q	|	|	|	|
0+50	0.0120	0.26	VQ	|	|	|	|
0+55	0.0140	0.29	VQ	|	|	|	|
1+ 0	0.0162	0.31	VQ	|	|	|	|
1+ 5	0.0184	0.31	VQ	|	|	|	|
1+10	0.0203	0.29	VQ	|	|	|	|
1+15	0.0222	0.27	VQ	|	|	|	|
1+20	0.0240	0.26	VQ	|	|	|	|
1+25	0.0258	0.26	VQ	|	|	|	|
1+30	0.0276	0.26	VQ	|	|	|	|
1+35	0.0294	0.26	VQ	|	|	|	|
1+40	0.0312	0.26	VQ	|	|	|	|
1+45	0.0329	0.26	VQ	|	|	|	|
1+50	0.0347	0.26	VQ	|	|	|	|
1+55	0.0368	0.30	VQ	|	|	|	|
2+ 0	0.0390	0.32	VQ	|	|	|	|
2+ 5	0.0412	0.32	VQ	|	|	|	|
2+10	0.0435	0.33	VQ	|	|	|	|
2+15	0.0458	0.33	|Q	|	|	|	|
2+20	0.0481	0.33	|Q	|	|	|	|
2+25	0.0504	0.34	|Q	|	|	|	|
2+30	0.0527	0.34	|Q	|	|	|	|
2+35	0.0551	0.35	|Q	|	|	|	|
2+40	0.0577	0.38	|Q	|	|	|	|
2+45	0.0605	0.40	|Q	|	|	|	|
2+50	0.0633	0.41	|Q	|	|	|	|
2+55	0.0661	0.41	|Q	|	|	|	|
3+ 0	0.0690	0.42	|Q	|	|	|	|
3+ 5	0.0719	0.42	|Q	|	|	|	|
3+10	0.0748	0.42	|Q	|	|	|	|
3+15	0.0777	0.42	|Q	|	|	|	|
3+20	0.0806	0.42	|Q	|	|	|	|
3+25	0.0835	0.42	|Q	|	|	|	|
3+30	0.0865	0.42	|Q	|	|	|	|
3+35	0.0894	0.42	|QV	|	|	|	|
3+40	0.0923	0.42	|QV	|	|	|	|
3+45	0.0952	0.42	|QV	|	|	|	|
3+50	0.0982	0.43	|QV	|	|	|	|
3+55	0.1014	0.47	|QV	|	|	|	|
4+ 0	0.1048	0.49	|QV	|	|	|	|
4+ 5	0.1082	0.49	|QV	|	|	|	|
4+10	0.1116	0.50	|QV	|	|	|	|
4+15	0.1151	0.50	| Q	|	|	|	|
4+20	0.1186	0.51	| Q	|	|	|	|
4+25	0.1224	0.55	| Q	|	|	|	|
4+30	0.1263	0.57	| Q	|	|	|	|
4+35	0.1303	0.58	| Q	|	|	|	|
4+40	0.1343	0.58	| QV	|	|	|	|
4+45	0.1383	0.59	| QV	|	|	|	|
4+50	0.1424	0.60	| QV	|	|	|	|
4+55	0.1468	0.63	| QV	|	|	|	|
5+ 0	0.1513	0.65	| QV	|	|	|	|
5+ 5	0.1557	0.65	| QV	|	|	|	|
5+10	0.1597	0.58	| QV	|	|	|	|
5+15	0.1635	0.55	| QV	|	|	|	|
5+20	0.1673	0.54	| QV	|	|	|	|

5+25	0.1712	0.57	QV				
5+30	0.1752	0.58	QV				
5+35	0.1793	0.60	Q V				
5+40	0.1836	0.63	Q V				
5+45	0.1881	0.65	Q V				
5+50	0.1927	0.66	Q V				
5+55	0.1973	0.67	Q V				
6+ 0	0.2019	0.67	Q V				
6+ 5	0.2066	0.68	Q V				
6+10	0.2115	0.72	Q V				
6+15	0.2166	0.74	Q V				
6+20	0.2218	0.75	Q V				
6+25	0.2269	0.75	Q V				
6+30	0.2321	0.76	Q V				
6+35	0.2374	0.77	Q V				
6+40	0.2430	0.80	Q V				
6+45	0.2486	0.82	Q V				
6+50	0.2544	0.83	Q V				
6+55	0.2601	0.84	Q V				
7+ 0	0.2659	0.84	Q V				
7+ 5	0.2717	0.84	Q V				
7+10	0.2775	0.85	Q V				
7+15	0.2834	0.85	Q V				
7+20	0.2893	0.86	Q V				
7+25	0.2954	0.89	Q V				
7+30	0.3017	0.91	Q V				
7+35	0.3081	0.93	Q V				
7+40	0.3147	0.96	Q V				
7+45	0.3215	0.99	Q V				
7+50	0.3284	1.01	Q V				
7+55	0.3356	1.05	Q V				
8+ 0	0.3430	1.07	Q V				
8+ 5	0.3506	1.10	Q V				
8+10	0.3587	1.17	Q V				
8+15	0.3670	1.22	Q V				
8+20	0.3756	1.24	Q V				
8+25	0.3841	1.25	Q V				
8+30	0.3928	1.26	Q V				
8+35	0.4015	1.27	Q V				
8+40	0.4105	1.31	Q V				
8+45	0.4197	1.33	Q V				
8+50	0.4290	1.35	Q V				
8+55	0.4386	1.39	Q V				
9+ 0	0.4483	1.41	Q V				
9+ 5	0.4582	1.44	Q V				
9+10	0.4686	1.51	Q V				
9+15	0.4793	1.56	Q V				
9+20	0.4902	1.58	Q V				
9+25	0.5015	1.63	Q V				
9+30	0.5129	1.66	Q V				
9+35	0.5244	1.68	Q V				
9+40	0.5363	1.72	Q V				
9+45	0.5483	1.75	Q V				
9+50	0.5605	1.77	Q V				
9+55	0.5730	1.81	Q V				
10+ 0	0.5856	1.83	Q V				
10+ 5	0.5979	1.79	Q V				
10+10	0.6086	1.56	Q V				
10+15	0.6184	1.42	Q V				
10+20	0.6279	1.37	Q V				



15+25	1.4949	2.06	| Q |	|	|	| V |
15+30	1.5089	2.03	| Q |	|	|	| V |
15+35	1.5225	1.98	| Q |	|	|	| V |
15+40	1.5350	1.82	| Q |	|	|	| V |
15+45	1.5469	1.73	| Q |	|	|	| V |
15+50	1.5585	1.69	| Q |	|	|	| V |
15+55	1.5700	1.66	| Q |	|	|	| V |
16+ 0	1.5813	1.65	| Q |	|	|	| V |
16+ 5	1.5917	1.51	| Q |	|	|	| V |
16+10	1.5986	1.00	| Q |	|	|	| V |
16+15	1.6034	0.69	| Q |	|	|	| V |
16+20	1.6073	0.57	| Q |	|	|	| V |
16+25	1.6107	0.50	|Q |	|	|	| V |
16+30	1.6138	0.45	|Q |	|	|	| V |
16+35	1.6166	0.41	|Q |	|	|	| V |
16+40	1.6190	0.35	|Q |	|	|	| V |
16+45	1.6212	0.31	|Q |	|	|	| V |
16+50	1.6231	0.29	|Q |	|	|	| V |
16+55	1.6250	0.28	|Q |	|	|	| V |
17+ 0	1.6269	0.26	|Q |	|	|	| V |
17+ 5	1.6288	0.28	|Q |	|	|	| V |
17+10	1.6311	0.34	|Q |	|	|	| V |
17+15	1.6337	0.38	|Q |	|	|	| V |
17+20	1.6365	0.40	|Q |	|	|	| V |
17+25	1.6392	0.40	|Q |	|	|	| V |
17+30	1.6421	0.41	|Q |	|	|	| V |
17+35	1.6449	0.41	|Q |	|	|	| V |
17+40	1.6478	0.42	|Q |	|	|	| V |
17+45	1.6507	0.42	|Q |	|	|	| V |
17+50	1.6535	0.41	|Q |	|	|	| V |
17+55	1.6561	0.38	|Q |	|	|	| V |
18+ 0	1.6586	0.36	|Q |	|	|	| V |
18+ 5	1.6611	0.35	|Q |	|	|	| V |
18+10	1.6635	0.35	|Q |	|	|	| V |
18+15	1.6659	0.35	|Q |	|	|	| V |
18+20	1.6683	0.34	|Q |	|	|	| V |
18+25	1.6706	0.34	|Q |	|	|	| V |
18+30	1.6730	0.34	|Q |	|	|	| V |
18+35	1.6753	0.33	|Q |	|	|	| V |
18+40	1.6773	0.30	|Q |	|	|	| V |
18+45	1.6792	0.28	|Q |	|	|	| V |
18+50	1.6810	0.26	|Q |	|	|	| V |
18+55	1.6826	0.22	Q |	|	|	| V |
19+ 0	1.6839	0.20	Q |	|	|	| V |
19+ 5	1.6853	0.20	Q |	|	|	| V |
19+10	1.6868	0.23	Q |	|	|	| V |
19+15	1.6885	0.24	Q |	|	|	| V |
19+20	1.6903	0.25	|Q |	|	|	| V |
19+25	1.6923	0.29	|Q |	|	|	| V |
19+30	1.6944	0.31	|Q |	|	|	| V |
19+35	1.6966	0.31	|Q |	|	|	| V |
19+40	1.6985	0.28	|Q |	|	|	| V |
19+45	1.7004	0.27	|Q |	|	|	| V |
19+50	1.7021	0.25	|Q |	|	|	| V |
19+55	1.7036	0.22	Q |	|	|	| V |
20+ 0	1.7050	0.20	Q |	|	|	| V |
20+ 5	1.7063	0.20	Q |	|	|	| V |
20+10	1.7079	0.22	Q |	|	|	| V |
20+15	1.7095	0.24	Q |	|	|	| V |
20+20	1.7112	0.25	Q |	|	|	| V |

20+25	1.7129	0.25	Q	|	|	|	V |
20+30	1.7147	0.25	Q	|	|	|	V |
20+35	1.7164	0.25	|Q	|	|	|	V |
20+40	1.7181	0.25	|Q	|	|	|	V |
20+45	1.7199	0.25	|Q	|	|	|	V |
20+50	1.7216	0.24	Q	|	|	|	V |
20+55	1.7230	0.21	Q	|	|	|	V |
21+ 0	1.7243	0.19	Q	|	|	|	V |
21+ 5	1.7257	0.19	Q	|	|	|	V |
21+10	1.7272	0.22	Q	|	|	|	V |
21+15	1.7288	0.24	Q	|	|	|	V |
21+20	1.7305	0.24	Q	|	|	|	V|
21+25	1.7319	0.21	Q	|	|	|	V|
21+30	1.7332	0.19	Q	|	|	|	V|
21+35	1.7345	0.19	Q	|	|	|	V|
21+40	1.7360	0.22	Q	|	|	|	V|
21+45	1.7376	0.24	Q	|	|	|	V|
21+50	1.7392	0.23	Q	|	|	|	V|
21+55	1.7407	0.21	Q	|	|	|	V|
22+ 0	1.7419	0.19	Q	|	|	|	V|
22+ 5	1.7433	0.19	Q	|	|	|	V|
22+10	1.7448	0.22	Q	|	|	|	V|
22+15	1.7464	0.24	Q	|	|	|	V|
22+20	1.7480	0.23	Q	|	|	|	V|
22+25	1.7494	0.21	Q	|	|	|	V|
22+30	1.7507	0.19	Q	|	|	|	V|
22+35	1.7520	0.18	Q	|	|	|	V|
22+40	1.7532	0.18	Q	|	|	|	V|
22+45	1.7544	0.17	Q	|	|	|	V|
22+50	1.7556	0.17	Q	|	|	|	V|
22+55	1.7568	0.17	Q	|	|	|	V|
23+ 0	1.7579	0.17	Q	|	|	|	V|
23+ 5	1.7591	0.17	Q	|	|	|	V|
23+10	1.7603	0.17	Q	|	|	|	V|
23+15	1.7615	0.17	Q	|	|	|	V|
23+20	1.7626	0.17	Q	|	|	|	V|
23+25	1.7638	0.17	Q	|	|	|	V|
23+30	1.7650	0.17	Q	|	|	|	V|
23+35	1.7661	0.17	Q	|	|	|	V|
23+40	1.7673	0.17	Q	|	|	|	V|
23+45	1.7685	0.17	Q	|	|	|	V|
23+50	1.7696	0.17	Q	|	|	|	V|
23+55	1.7708	0.17	Q	|	|	|	V|
24+ 0	1.7720	0.17	Q	|	|	|	V|
24+ 5	1.7730	0.15	Q	|	|	|	V|
24+10	1.7736	0.09	Q	|	|	|	V|
24+15	1.7739	0.05	Q	|	|	|	V|
24+20	1.7742	0.03	Q	|	|	|	V|
24+25	1.7743	0.02	Q	|	|	|	V|
24+30	1.7744	0.01	Q	|	|	|	V|
24+35	1.7745	0.01	Q	|	|	|	V|
24+40	1.7745	0.01	Q	|	|	|	V|
24+45	1.7745	0.00	Q	|	|	|	V|
24+50	1.7746	0.00	Q	|	|	|	V|
24+55	1.7746	0.00	Q	|	|	|	V

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 11/09/23 File: 10A22410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0008 GOETZ MENIFEE
10-YEAR, 24-HOUR STORM EVENT
POST DEVELOPMENT
A2

Drainage Area = 4.23(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.23(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.111 Hr.
Lag time = 6.65 Min.
25% of lag time = 1.66 Min.
40% of lag time = 2.66 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]
4.23	2.06	8.71

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.23	5.32	22.50

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.401(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 3.401(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.230	69.00	0.860

Total Area Entered = 4.23(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
69.0	69.0	0.373	0.860	0.084	1.000	0.084
					Sum (F) =	0.084

Area averaged mean soil loss (F) (In/Hr) = 0.084
Minimum soil loss rate ((In/Hr)) = 0.042
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.210

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	75.143	11.972	0.510
2	0.167	150.286	42.545	1.814
3	0.250	225.428	21.424	0.913
4	0.333	300.571	8.586	0.366
5	0.417	375.714	5.192	0.221
6	0.500	450.857	3.360	0.143
7	0.583	525.999	2.339	0.100
8	0.667	601.142	1.712	0.073
9	0.750	676.285	1.195	0.051
10	0.833	751.428	0.815	0.035
11	0.917	826.570	0.861	0.037
		Sum =	100.000 Sum=	4.263

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.149)		0.006	0.021
2	0.17	0.07	0.027	(0.149)		0.006	0.021
3	0.25	0.07	0.027	(0.148)		0.006	0.021
4	0.33	0.10	0.041	(0.148)		0.009	0.032
5	0.42	0.10	0.041	(0.147)		0.009	0.032
6	0.50	0.10	0.041	(0.146)		0.009	0.032
7	0.58	0.10	0.041	(0.146)		0.009	0.032
8	0.67	0.10	0.041	(0.145)		0.009	0.032
9	0.75	0.10	0.041	(0.145)		0.009	0.032
10	0.83	0.13	0.054	(0.144)		0.011	0.043
11	0.92	0.13	0.054	(0.144)		0.011	0.043
12	1.00	0.13	0.054	(0.143)		0.011	0.043
13	1.08	0.10	0.041	(0.142)		0.009	0.032
14	1.17	0.10	0.041	(0.142)		0.009	0.032

15	1.25	0.10	0.041	(0.141)	0.009	0.032
16	1.33	0.10	0.041	(0.141)	0.009	0.032
17	1.42	0.10	0.041	(0.140)	0.009	0.032
18	1.50	0.10	0.041	(0.140)	0.009	0.032
19	1.58	0.10	0.041	(0.139)	0.009	0.032
20	1.67	0.10	0.041	(0.139)	0.009	0.032
21	1.75	0.10	0.041	(0.138)	0.009	0.032
22	1.83	0.13	0.054	(0.137)	0.011	0.043
23	1.92	0.13	0.054	(0.137)	0.011	0.043
24	2.00	0.13	0.054	(0.136)	0.011	0.043
25	2.08	0.13	0.054	(0.136)	0.011	0.043
26	2.17	0.13	0.054	(0.135)	0.011	0.043
27	2.25	0.13	0.054	(0.135)	0.011	0.043
28	2.33	0.13	0.054	(0.134)	0.011	0.043
29	2.42	0.13	0.054	(0.134)	0.011	0.043
30	2.50	0.13	0.054	(0.133)	0.011	0.043
31	2.58	0.17	0.068	(0.133)	0.014	0.054
32	2.67	0.17	0.068	(0.132)	0.014	0.054
33	2.75	0.17	0.068	(0.131)	0.014	0.054
34	2.83	0.17	0.068	(0.131)	0.014	0.054
35	2.92	0.17	0.068	(0.130)	0.014	0.054
36	3.00	0.17	0.068	(0.130)	0.014	0.054
37	3.08	0.17	0.068	(0.129)	0.014	0.054
38	3.17	0.17	0.068	(0.129)	0.014	0.054
39	3.25	0.17	0.068	(0.128)	0.014	0.054
40	3.33	0.17	0.068	(0.128)	0.014	0.054
41	3.42	0.17	0.068	(0.127)	0.014	0.054
42	3.50	0.17	0.068	(0.127)	0.014	0.054
43	3.58	0.17	0.068	(0.126)	0.014	0.054
44	3.67	0.17	0.068	(0.126)	0.014	0.054
45	3.75	0.17	0.068	(0.125)	0.014	0.054
46	3.83	0.20	0.082	(0.124)	0.017	0.064
47	3.92	0.20	0.082	(0.124)	0.017	0.064
48	4.00	0.20	0.082	(0.123)	0.017	0.064
49	4.08	0.20	0.082	(0.123)	0.017	0.064
50	4.17	0.20	0.082	(0.122)	0.017	0.064
51	4.25	0.20	0.082	(0.122)	0.017	0.064
52	4.33	0.23	0.095	(0.121)	0.020	0.075
53	4.42	0.23	0.095	(0.121)	0.020	0.075
54	4.50	0.23	0.095	(0.120)	0.020	0.075
55	4.58	0.23	0.095	(0.120)	0.020	0.075
56	4.67	0.23	0.095	(0.119)	0.020	0.075
57	4.75	0.23	0.095	(0.119)	0.020	0.075
58	4.83	0.27	0.109	(0.118)	0.023	0.086
59	4.92	0.27	0.109	(0.118)	0.023	0.086
60	5.00	0.27	0.109	(0.117)	0.023	0.086
61	5.08	0.20	0.082	(0.117)	0.017	0.064
62	5.17	0.20	0.082	(0.116)	0.017	0.064
63	5.25	0.20	0.082	(0.116)	0.017	0.064
64	5.33	0.23	0.095	(0.115)	0.020	0.075
65	5.42	0.23	0.095	(0.115)	0.020	0.075
66	5.50	0.23	0.095	(0.114)	0.020	0.075
67	5.58	0.27	0.109	(0.114)	0.023	0.086
68	5.67	0.27	0.109	(0.113)	0.023	0.086
69	5.75	0.27	0.109	(0.113)	0.023	0.086
70	5.83	0.27	0.109	(0.112)	0.023	0.086
71	5.92	0.27	0.109	(0.112)	0.023	0.086
72	6.00	0.27	0.109	(0.111)	0.023	0.086
73	6.08	0.30	0.122	(0.111)	0.026	0.097
74	6.17	0.30	0.122	(0.110)	0.026	0.097

75	6.25	0.30	0.122	(0.110)	0.026	0.097
76	6.33	0.30	0.122	(0.109)	0.026	0.097
77	6.42	0.30	0.122	(0.109)	0.026	0.097
78	6.50	0.30	0.122	(0.108)	0.026	0.097
79	6.58	0.33	0.136	(0.108)	0.029	0.107
80	6.67	0.33	0.136	(0.107)	0.029	0.107
81	6.75	0.33	0.136	(0.107)	0.029	0.107
82	6.83	0.33	0.136	(0.106)	0.029	0.107
83	6.92	0.33	0.136	(0.106)	0.029	0.107
84	7.00	0.33	0.136	(0.105)	0.029	0.107
85	7.08	0.33	0.136	(0.105)	0.029	0.107
86	7.17	0.33	0.136	(0.104)	0.029	0.107
87	7.25	0.33	0.136	(0.104)	0.029	0.107
88	7.33	0.37	0.150	(0.103)	0.031	0.118
89	7.42	0.37	0.150	(0.103)	0.031	0.118
90	7.50	0.37	0.150	(0.103)	0.031	0.118
91	7.58	0.40	0.163	(0.102)	0.034	0.129
92	7.67	0.40	0.163	(0.102)	0.034	0.129
93	7.75	0.40	0.163	(0.101)	0.034	0.129
94	7.83	0.43	0.177	(0.101)	0.037	0.140
95	7.92	0.43	0.177	(0.100)	0.037	0.140
96	8.00	0.43	0.177	(0.100)	0.037	0.140
97	8.08	0.50	0.204	(0.099)	0.043	0.161
98	8.17	0.50	0.204	(0.099)	0.043	0.161
99	8.25	0.50	0.204	(0.098)	0.043	0.161
100	8.33	0.50	0.204	(0.098)	0.043	0.161
101	8.42	0.50	0.204	(0.097)	0.043	0.161
102	8.50	0.50	0.204	(0.097)	0.043	0.161
103	8.58	0.53	0.218	(0.096)	0.046	0.172
104	8.67	0.53	0.218	(0.096)	0.046	0.172
105	8.75	0.53	0.218	(0.096)	0.046	0.172
106	8.83	0.57	0.231	(0.095)	0.049	0.183
107	8.92	0.57	0.231	(0.095)	0.049	0.183
108	9.00	0.57	0.231	(0.094)	0.049	0.183
109	9.08	0.63	0.258	(0.094)	0.054	0.204
110	9.17	0.63	0.258	(0.093)	0.054	0.204
111	9.25	0.63	0.258	(0.093)	0.054	0.204
112	9.33	0.67	0.272	(0.092)	0.057	0.215
113	9.42	0.67	0.272	(0.092)	0.057	0.215
114	9.50	0.67	0.272	(0.092)	0.057	0.215
115	9.58	0.70	0.286	(0.091)	0.060	0.226
116	9.67	0.70	0.286	(0.091)	0.060	0.226
117	9.75	0.70	0.286	(0.090)	0.060	0.226
118	9.83	0.73	0.299	(0.090)	0.063	0.236
119	9.92	0.73	0.299	(0.089)	0.063	0.236
120	10.00	0.73	0.299	(0.089)	0.063	0.236
121	10.08	0.50	0.204	(0.089)	0.043	0.161
122	10.17	0.50	0.204	(0.088)	0.043	0.161
123	10.25	0.50	0.204	(0.088)	0.043	0.161
124	10.33	0.50	0.204	(0.087)	0.043	0.161
125	10.42	0.50	0.204	(0.087)	0.043	0.161
126	10.50	0.50	0.204	(0.086)	0.043	0.161
127	10.58	0.67	0.272	(0.086)	0.057	0.215
128	10.67	0.67	0.272	(0.086)	0.057	0.215
129	10.75	0.67	0.272	(0.085)	0.057	0.215
130	10.83	0.67	0.272	(0.085)	0.057	0.215
131	10.92	0.67	0.272	(0.084)	0.057	0.215
132	11.00	0.67	0.272	(0.084)	0.057	0.215
133	11.08	0.63	0.258	(0.083)	0.054	0.204
134	11.17	0.63	0.258	(0.083)	0.054	0.204

135	11.25	0.63	0.258	(0.083)	0.054	0.204
136	11.33	0.63	0.258	(0.082)	0.054	0.204
137	11.42	0.63	0.258	(0.082)	0.054	0.204
138	11.50	0.63	0.258	(0.081)	0.054	0.204
139	11.58	0.57	0.231	(0.081)	0.049	0.183
140	11.67	0.57	0.231	(0.081)	0.049	0.183
141	11.75	0.57	0.231	(0.080)	0.049	0.183
142	11.83	0.60	0.245	(0.080)	0.051	0.193
143	11.92	0.60	0.245	(0.079)	0.051	0.193
144	12.00	0.60	0.245	(0.079)	0.051	0.193
145	12.08	0.83	0.340	(0.079)	0.071	0.269
146	12.17	0.83	0.340	(0.078)	0.071	0.269
147	12.25	0.83	0.340	(0.078)	0.071	0.269
148	12.33	0.87	0.354	(0.077)	0.074	0.279
149	12.42	0.87	0.354	(0.077)	0.074	0.279
150	12.50	0.87	0.354	(0.077)	0.074	0.279
151	12.58	0.93	0.381	0.076	(0.080)	0.305
152	12.67	0.93	0.381	0.076	(0.080)	0.305
153	12.75	0.93	0.381	0.076	(0.080)	0.305
154	12.83	0.97	0.395	0.075	(0.083)	0.319
155	12.92	0.97	0.395	0.075	(0.083)	0.320
156	13.00	0.97	0.395	0.074	(0.083)	0.320
157	13.08	1.13	0.463	0.074	(0.097)	0.389
158	13.17	1.13	0.463	0.074	(0.097)	0.389
159	13.25	1.13	0.463	0.073	(0.097)	0.389
160	13.33	1.13	0.463	0.073	(0.097)	0.390
161	13.42	1.13	0.463	0.073	(0.097)	0.390
162	13.50	1.13	0.463	0.072	(0.097)	0.390
163	13.58	0.77	0.313	(0.072)	0.066	0.247
164	13.67	0.77	0.313	(0.071)	0.066	0.247
165	13.75	0.77	0.313	(0.071)	0.066	0.247
166	13.83	0.77	0.313	(0.071)	0.066	0.247
167	13.92	0.77	0.313	(0.070)	0.066	0.247
168	14.00	0.77	0.313	(0.070)	0.066	0.247
169	14.08	0.90	0.367	0.070	(0.077)	0.298
170	14.17	0.90	0.367	0.069	(0.077)	0.298
171	14.25	0.90	0.367	0.069	(0.077)	0.298
172	14.33	0.87	0.354	0.069	(0.074)	0.285
173	14.42	0.87	0.354	0.068	(0.074)	0.286
174	14.50	0.87	0.354	0.068	(0.074)	0.286
175	14.58	0.87	0.354	0.068	(0.074)	0.286
176	14.67	0.87	0.354	0.067	(0.074)	0.287
177	14.75	0.87	0.354	0.067	(0.074)	0.287
178	14.83	0.83	0.340	0.066	(0.071)	0.274
179	14.92	0.83	0.340	0.066	(0.071)	0.274
180	15.00	0.83	0.340	0.066	(0.071)	0.274
181	15.08	0.80	0.327	0.065	(0.069)	0.261
182	15.17	0.80	0.327	0.065	(0.069)	0.261
183	15.25	0.80	0.327	0.065	(0.069)	0.262
184	15.33	0.77	0.313	0.064	(0.066)	0.248
185	15.42	0.77	0.313	0.064	(0.066)	0.249
186	15.50	0.77	0.313	0.064	(0.066)	0.249
187	15.58	0.63	0.258	(0.063)	0.054	0.204
188	15.67	0.63	0.258	(0.063)	0.054	0.204
189	15.75	0.63	0.258	(0.063)	0.054	0.204
190	15.83	0.63	0.258	(0.063)	0.054	0.204
191	15.92	0.63	0.258	(0.062)	0.054	0.204
192	16.00	0.63	0.258	(0.062)	0.054	0.204
193	16.08	0.13	0.054	(0.062)	0.011	0.043
194	16.17	0.13	0.054	(0.061)	0.011	0.043

195	16.25	0.13	0.054	(0.061)	0.011	0.043
196	16.33	0.13	0.054	(0.061)	0.011	0.043
197	16.42	0.13	0.054	(0.060)	0.011	0.043
198	16.50	0.13	0.054	(0.060)	0.011	0.043
199	16.58	0.10	0.041	(0.060)	0.009	0.032
200	16.67	0.10	0.041	(0.059)	0.009	0.032
201	16.75	0.10	0.041	(0.059)	0.009	0.032
202	16.83	0.10	0.041	(0.059)	0.009	0.032
203	16.92	0.10	0.041	(0.058)	0.009	0.032
204	17.00	0.10	0.041	(0.058)	0.009	0.032
205	17.08	0.17	0.068	(0.058)	0.014	0.054
206	17.17	0.17	0.068	(0.058)	0.014	0.054
207	17.25	0.17	0.068	(0.057)	0.014	0.054
208	17.33	0.17	0.068	(0.057)	0.014	0.054
209	17.42	0.17	0.068	(0.057)	0.014	0.054
210	17.50	0.17	0.068	(0.056)	0.014	0.054
211	17.58	0.17	0.068	(0.056)	0.014	0.054
212	17.67	0.17	0.068	(0.056)	0.014	0.054
213	17.75	0.17	0.068	(0.056)	0.014	0.054
214	17.83	0.13	0.054	(0.055)	0.011	0.043
215	17.92	0.13	0.054	(0.055)	0.011	0.043
216	18.00	0.13	0.054	(0.055)	0.011	0.043
217	18.08	0.13	0.054	(0.055)	0.011	0.043
218	18.17	0.13	0.054	(0.054)	0.011	0.043
219	18.25	0.13	0.054	(0.054)	0.011	0.043
220	18.33	0.13	0.054	(0.054)	0.011	0.043
221	18.42	0.13	0.054	(0.053)	0.011	0.043
222	18.50	0.13	0.054	(0.053)	0.011	0.043
223	18.58	0.10	0.041	(0.053)	0.009	0.032
224	18.67	0.10	0.041	(0.053)	0.009	0.032
225	18.75	0.10	0.041	(0.052)	0.009	0.032
226	18.83	0.07	0.027	(0.052)	0.006	0.021
227	18.92	0.07	0.027	(0.052)	0.006	0.021
228	19.00	0.07	0.027	(0.052)	0.006	0.021
229	19.08	0.10	0.041	(0.051)	0.009	0.032
230	19.17	0.10	0.041	(0.051)	0.009	0.032
231	19.25	0.10	0.041	(0.051)	0.009	0.032
232	19.33	0.13	0.054	(0.051)	0.011	0.043
233	19.42	0.13	0.054	(0.051)	0.011	0.043
234	19.50	0.13	0.054	(0.050)	0.011	0.043
235	19.58	0.10	0.041	(0.050)	0.009	0.032
236	19.67	0.10	0.041	(0.050)	0.009	0.032
237	19.75	0.10	0.041	(0.050)	0.009	0.032
238	19.83	0.07	0.027	(0.049)	0.006	0.021
239	19.92	0.07	0.027	(0.049)	0.006	0.021
240	20.00	0.07	0.027	(0.049)	0.006	0.021
241	20.08	0.10	0.041	(0.049)	0.009	0.032
242	20.17	0.10	0.041	(0.048)	0.009	0.032
243	20.25	0.10	0.041	(0.048)	0.009	0.032
244	20.33	0.10	0.041	(0.048)	0.009	0.032
245	20.42	0.10	0.041	(0.048)	0.009	0.032
246	20.50	0.10	0.041	(0.048)	0.009	0.032
247	20.58	0.10	0.041	(0.047)	0.009	0.032
248	20.67	0.10	0.041	(0.047)	0.009	0.032
249	20.75	0.10	0.041	(0.047)	0.009	0.032
250	20.83	0.07	0.027	(0.047)	0.006	0.021
251	20.92	0.07	0.027	(0.047)	0.006	0.021
252	21.00	0.07	0.027	(0.047)	0.006	0.021
253	21.08	0.10	0.041	(0.046)	0.009	0.032
254	21.17	0.10	0.041	(0.046)	0.009	0.032

255	21.25	0.10	0.041	(0.046)	0.009	0.032
256	21.33	0.07	0.027	(0.046)	0.006	0.021
257	21.42	0.07	0.027	(0.046)	0.006	0.021
258	21.50	0.07	0.027	(0.045)	0.006	0.021
259	21.58	0.10	0.041	(0.045)	0.009	0.032
260	21.67	0.10	0.041	(0.045)	0.009	0.032
261	21.75	0.10	0.041	(0.045)	0.009	0.032
262	21.83	0.07	0.027	(0.045)	0.006	0.021
263	21.92	0.07	0.027	(0.045)	0.006	0.021
264	22.00	0.07	0.027	(0.044)	0.006	0.021
265	22.08	0.10	0.041	(0.044)	0.009	0.032
266	22.17	0.10	0.041	(0.044)	0.009	0.032
267	22.25	0.10	0.041	(0.044)	0.009	0.032
268	22.33	0.07	0.027	(0.044)	0.006	0.021
269	22.42	0.07	0.027	(0.044)	0.006	0.021
270	22.50	0.07	0.027	(0.044)	0.006	0.021
271	22.58	0.07	0.027	(0.044)	0.006	0.021
272	22.67	0.07	0.027	(0.043)	0.006	0.021
273	22.75	0.07	0.027	(0.043)	0.006	0.021
274	22.83	0.07	0.027	(0.043)	0.006	0.021
275	22.92	0.07	0.027	(0.043)	0.006	0.021
276	23.00	0.07	0.027	(0.043)	0.006	0.021
277	23.08	0.07	0.027	(0.043)	0.006	0.021
278	23.17	0.07	0.027	(0.043)	0.006	0.021
279	23.25	0.07	0.027	(0.043)	0.006	0.021
280	23.33	0.07	0.027	(0.043)	0.006	0.021
281	23.42	0.07	0.027	(0.043)	0.006	0.021
282	23.50	0.07	0.027	(0.042)	0.006	0.021
283	23.58	0.07	0.027	(0.042)	0.006	0.021
284	23.67	0.07	0.027	(0.042)	0.006	0.021
285	23.75	0.07	0.027	(0.042)	0.006	0.021
286	23.83	0.07	0.027	(0.042)	0.006	0.021
287	23.92	0.07	0.027	(0.042)	0.006	0.021
288	24.00	0.07	0.027	(0.042)	0.006	0.021

(Loss Rate Not Used)

Sum = 100.0 Sum = 32.5

Flood volume = Effective rainfall 2.71(In)
times area 4.2(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 0.69(In)
Total soil loss = 0.244(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 41608.9 Cubic Feet
Total soil loss = 10615.6 Cubic Feet

Peak flow rate of this hydrograph = 1.641(CFS)

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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))

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	0.0004	0.05	Q	|	|	|	|
0+15	0.0009	0.07	Q	|	|	|	|
0+20	0.0015	0.08	Q	|	|	|	|
0+25	0.0022	0.11	Q	|	|	|	|

0+30	0.0030	0.12	Q	|	|	|	|
0+35	0.0039	0.13	Q	|	|	|	|
0+40	0.0048	0.13	Q	|	|	|	|
0+45	0.0057	0.13	Q	|	|	|	|
0+50	0.0067	0.14	Q	|	|	|	|
0+55	0.0078	0.16	Q	|	|	|	|
1+ 0	0.0090	0.17	Q	|	|	|	|
1+ 5	0.0101	0.17	Q	|	|	|	|
1+10	0.0112	0.15	Q	|	|	|	|
1+15	0.0122	0.15	Q	|	|	|	|
1+20	0.0132	0.14	Q	|	|	|	|
1+25	0.0142	0.14	Q	|	|	|	|
1+30	0.0151	0.14	Q	|	|	|	|
1+35	0.0161	0.14	Q	|	|	|	|
1+40	0.0170	0.14	Q	|	|	|	|
1+45	0.0180	0.14	Q	|	|	|	|
1+50	0.0190	0.14	Q	|	|	|	|
1+55	0.0201	0.16	Q	|	|	|	|
2+ 0	0.0213	0.17	Q	|	|	|	|
2+ 5	0.0225	0.18	Q	|	|	|	|
2+10	0.0237	0.18	Q	|	|	|	|
2+15	0.0250	0.18	QV	|	|	|	|
2+20	0.0262	0.18	QV	|	|	|	|
2+25	0.0275	0.18	QV	|	|	|	|
2+30	0.0287	0.18	QV	|	|	|	|
2+35	0.0300	0.19	QV	|	|	|	|
2+40	0.0315	0.21	QV	|	|	|	|
2+45	0.0330	0.22	QV	|	|	|	|
2+50	0.0345	0.22	QV	|	|	|	|
2+55	0.0360	0.22	QV	|	|	|	|
3+ 0	0.0376	0.23	QV	|	|	|	|
3+ 5	0.0392	0.23	QV	|	|	|	|
3+10	0.0407	0.23	QV	|	|	|	|
3+15	0.0423	0.23	QV	|	|	|	|
3+20	0.0439	0.23	QV	|	|	|	|
3+25	0.0455	0.23	QV	|	|	|	|
3+30	0.0470	0.23	QV	|	|	|	|
3+35	0.0486	0.23	Q V	|	|	|	|
3+40	0.0502	0.23	Q V	|	|	|	|
3+45	0.0518	0.23	Q V	|	|	|	|
3+50	0.0534	0.23	Q V	|	|	|	|
3+55	0.0551	0.25	|QV	|	|	|	|
4+ 0	0.0570	0.26	|QV	|	|	|	|
4+ 5	0.0588	0.27	|QV	|	|	|	|
4+10	0.0607	0.27	|QV	|	|	|	|
4+15	0.0625	0.27	|QV	|	|	|	|
4+20	0.0645	0.28	|QV	|	|	|	|
4+25	0.0665	0.30	|QV	|	|	|	|
4+30	0.0686	0.31	|QV	|	|	|	|
4+35	0.0708	0.31	|QV	|	|	|	|
4+40	0.0730	0.32	|Q V	|	|	|	|
4+45	0.0752	0.32	|Q V	|	|	|	|
4+50	0.0774	0.32	|Q V	|	|	|	|
4+55	0.0798	0.34	|Q V	|	|	|	|
5+ 0	0.0822	0.35	|Q V	|	|	|	|
5+ 5	0.0846	0.35	|Q V	|	|	|	|
5+10	0.0868	0.31	|Q V	|	|	|	|
5+15	0.0888	0.29	|Q V	|	|	|	|
5+20	0.0908	0.29	|Q V	|	|	|	|
5+25	0.0929	0.31	|Q V	|	|	|	|

5+30	0.0951	0.32	Q V				
5+35	0.0973	0.32	Q V				
5+40	0.0997	0.34	Q V				
5+45	0.1021	0.35	Q V				
5+50	0.1046	0.36	Q V				
5+55	0.1071	0.36	Q V				
6+ 0	0.1096	0.36	Q V				
6+ 5	0.1121	0.37	Q V				
6+10	0.1148	0.39	Q V				
6+15	0.1176	0.40	Q V				
6+20	0.1204	0.41	Q V				
6+25	0.1232	0.41	Q V				
6+30	0.1260	0.41	Q V				
6+35	0.1289	0.42	Q V				
6+40	0.1319	0.44	Q V				
6+45	0.1349	0.45	Q V				
6+50	0.1380	0.45	Q V				
6+55	0.1412	0.45	Q V				
7+ 0	0.1443	0.46	Q V				
7+ 5	0.1474	0.46	Q V				
7+10	0.1506	0.46	Q V				
7+15	0.1537	0.46	Q V				
7+20	0.1569	0.46	Q V				
7+25	0.1603	0.48	Q V				
7+30	0.1637	0.49	Q V				
7+35	0.1671	0.50	Q V				
7+40	0.1707	0.52	Q V				
7+45	0.1744	0.54	Q V				
7+50	0.1782	0.55	Q V				
7+55	0.1821	0.57	Q V				
8+ 0	0.1861	0.58	Q V				
8+ 5	0.1902	0.60	Q V				
8+10	0.1946	0.64	Q V				
8+15	0.1992	0.66	Q V				
8+20	0.2038	0.67	Q V				
8+25	0.2085	0.68	Q V				
8+30	0.2132	0.68	Q V				
8+35	0.2179	0.69	Q V				
8+40	0.2228	0.71	Q V				
8+45	0.2278	0.72	Q V				
8+50	0.2328	0.73	Q V				
8+55	0.2380	0.75	Q V				
9+ 0	0.2433	0.77	Q V				
9+ 5	0.2486	0.78	Q V				
9+10	0.2543	0.82	Q V				
9+15	0.2601	0.84	Q V				
9+20	0.2660	0.86	Q V				
9+25	0.2721	0.89	Q V				
9+30	0.2783	0.90	Q V				
9+35	0.2846	0.91	Q V				
9+40	0.2910	0.93	Q V				
9+45	0.2976	0.95	Q V				
9+50	0.3042	0.96	Q V				
9+55	0.3109	0.98	Q V				
10+ 0	0.3178	0.99	Q V				
10+ 5	0.3244	0.96	Q V				
10+10	0.3301	0.83	Q V				
10+15	0.3353	0.76	Q V				
10+20	0.3404	0.73	Q V				
10+25	0.3453	0.72	Q V				

10+30	0.3502	0.71	Q	V			
10+35	0.3552	0.73	Q	V			
10+40	0.3609	0.82	Q	V			
10+45	0.3669	0.87	Q	V			
10+50	0.3730	0.88	Q	V			
10+55	0.3791	0.89	Q	V			
11+ 0	0.3853	0.90	Q	V			
11+ 5	0.3915	0.90	Q	V			
11+10	0.3976	0.89	Q	V			
11+15	0.4037	0.88	Q	V			
11+20	0.4097	0.88	Q	V			
11+25	0.4157	0.88	Q	V			
11+30	0.4217	0.87	Q	V			
11+35	0.4277	0.86	Q	V			
11+40	0.4333	0.82	Q	V			
11+45	0.4389	0.80	Q	V			
11+50	0.4444	0.80	Q	V			
11+55	0.4500	0.81	Q	V			
12+ 0	0.4556	0.82	Q	V			
12+ 5	0.4616	0.86	Q	V			
12+10	0.4684	1.00	Q	V			
12+15	0.4758	1.07	Q	V			
12+20	0.4834	1.10	Q	V			
12+25	0.4912	1.14	Q	V			
12+30	0.4992	1.16	Q	V			
12+35	0.5073	1.18	Q	V			
12+40	0.5158	1.24	Q	V			
12+45	0.5245	1.27	Q	V			
12+50	0.5334	1.29	Q	V			
12+55	0.5425	1.32	Q	V			
13+ 0	0.5517	1.34	Q	V			
13+ 5	0.5613	1.38	Q	V			
13+10	0.5717	1.51	Q	V			
13+15	0.5826	1.58	Q	V			
13+20	0.5937	1.61	Q	V			
13+25	0.6049	1.63	Q	V			
13+30	0.6162	1.64	Q	V			
13+35	0.6271	1.58	Q	V			
13+40	0.6362	1.32	Q	V			
13+45	0.6444	1.20	Q	V			
13+50	0.6523	1.15	Q	V			
13+55	0.6600	1.12	Q	V			
14+ 0	0.6676	1.10	Q	V			
14+ 5	0.6752	1.11	Q	V			
14+10	0.6834	1.19	Q	V			
14+15	0.6918	1.23	Q	V			
14+20	0.7004	1.24	Q	V			
14+25	0.7088	1.22	Q	V			
14+30	0.7171	1.22	Q	V			
14+35	0.7255	1.22	Q	V			
14+40	0.7339	1.22	Q	V			
14+45	0.7423	1.22	Q	V			
14+50	0.7507	1.22	Q	V			
14+55	0.7589	1.19	Q	V			
15+ 0	0.7671	1.18	Q	V			
15+ 5	0.7751	1.17	Q	V			
15+10	0.7830	1.14	Q	V			
15+15	0.7908	1.13	Q	V			
15+20	0.7985	1.12	Q	V			
15+25	0.8060	1.09	Q	V			

15+30	0.8135	1.08		Q			V
15+35	0.8207	1.05		Q			V
15+40	0.8273	0.96		Q			V
15+45	0.8337	0.92		Q			V
15+50	0.8399	0.90		Q			V
15+55	0.8460	0.89		Q			V
16+ 0	0.8521	0.89		Q			V
16+ 5	0.8576	0.80		Q			V
16+10	0.8611	0.50		Q			V
16+15	0.8635	0.35		Q			V
16+20	0.8655	0.29		Q			V
16+25	0.8673	0.25		Q			V
16+30	0.8689	0.23		Q			V
16+35	0.8703	0.21		Q			V
16+40	0.8715	0.18		Q			V
16+45	0.8726	0.16		Q			V
16+50	0.8737	0.15		Q			V
16+55	0.8746	0.14		Q			V
17+ 0	0.8756	0.14		Q			V
17+ 5	0.8767	0.15		Q			V
17+10	0.8780	0.19		Q			V
17+15	0.8794	0.21		Q			V
17+20	0.8809	0.22		Q			V
17+25	0.8824	0.22		Q			V
17+30	0.8839	0.22		Q			V
17+35	0.8855	0.23		Q			V
17+40	0.8870	0.23		Q			V
17+45	0.8886	0.23		Q			V
17+50	0.8901	0.22		Q			V
17+55	0.8915	0.20		Q			V
18+ 0	0.8929	0.19		Q			V
18+ 5	0.8942	0.19		Q			V
18+10	0.8955	0.19		Q			V
18+15	0.8968	0.19		Q			V
18+20	0.8980	0.19		Q			V
18+25	0.8993	0.18		Q			V
18+30	0.9006	0.18		Q			V
18+35	0.9018	0.18		Q			V
18+40	0.9029	0.16		Q			V
18+45	0.9039	0.15		Q			V
18+50	0.9049	0.14		Q			V
18+55	0.9057	0.12		Q			V
19+ 0	0.9064	0.11		Q			V
19+ 5	0.9072	0.11		Q			V
19+10	0.9080	0.12		Q			V
19+15	0.9089	0.13		Q			V
19+20	0.9098	0.14		Q			V
19+25	0.9109	0.16		Q			V
19+30	0.9121	0.17		Q			V
19+35	0.9133	0.17		Q			V
19+40	0.9143	0.15		Q			V
19+45	0.9153	0.14		Q			V
19+50	0.9163	0.14		Q			V
19+55	0.9171	0.12		Q			V
20+ 0	0.9178	0.11		Q			V
20+ 5	0.9185	0.11		Q			V
20+10	0.9194	0.12		Q			V
20+15	0.9203	0.13		Q			V
20+20	0.9212	0.13		Q			V
20+25	0.9221	0.13		Q			V

20+30	0.9230	0.14	Q	|	|	|	V |
20+35	0.9240	0.14	Q	|	|	|	V |
20+40	0.9249	0.14	Q	|	|	|	V |
20+45	0.9258	0.14	Q	|	|	|	V |
20+50	0.9268	0.13	Q	|	|	|	V |
20+55	0.9275	0.11	Q	|	|	|	V |
21+ 0	0.9282	0.10	Q	|	|	|	V |
21+ 5	0.9290	0.10	Q	|	|	|	V |
21+10	0.9298	0.12	Q	|	|	|	V |
21+15	0.9307	0.13	Q	|	|	|	V |
21+20	0.9316	0.13	Q	|	|	|	V|
21+25	0.9323	0.11	Q	|	|	|	V|
21+30	0.9330	0.10	Q	|	|	|	V|
21+35	0.9337	0.10	Q	|	|	|	V|
21+40	0.9345	0.12	Q	|	|	|	V|
21+45	0.9354	0.13	Q	|	|	|	V|
21+50	0.9363	0.13	Q	|	|	|	V|
21+55	0.9370	0.11	Q	|	|	|	V|
22+ 0	0.9377	0.10	Q	|	|	|	V|
22+ 5	0.9384	0.10	Q	|	|	|	V|
22+10	0.9393	0.12	Q	|	|	|	V|
22+15	0.9402	0.13	Q	|	|	|	V|
22+20	0.9410	0.13	Q	|	|	|	V|
22+25	0.9418	0.11	Q	|	|	|	V|
22+30	0.9425	0.10	Q	|	|	|	V|
22+35	0.9431	0.10	Q	|	|	|	V|
22+40	0.9438	0.10	Q	|	|	|	V|
22+45	0.9444	0.09	Q	|	|	|	V|
22+50	0.9451	0.09	Q	|	|	|	V|
22+55	0.9457	0.09	Q	|	|	|	V|
23+ 0	0.9464	0.09	Q	|	|	|	V|
23+ 5	0.9470	0.09	Q	|	|	|	V|
23+10	0.9476	0.09	Q	|	|	|	V|
23+15	0.9483	0.09	Q	|	|	|	V|
23+20	0.9489	0.09	Q	|	|	|	V|
23+25	0.9495	0.09	Q	|	|	|	V|
23+30	0.9502	0.09	Q	|	|	|	V|
23+35	0.9508	0.09	Q	|	|	|	V|
23+40	0.9514	0.09	Q	|	|	|	V|
23+45	0.9520	0.09	Q	|	|	|	V|
23+50	0.9527	0.09	Q	|	|	|	V|
23+55	0.9533	0.09	Q	|	|	|	V|
24+ 0	0.9539	0.09	Q	|	|	|	V|
24+ 5	0.9545	0.08	Q	|	|	|	V|
24+10	0.9548	0.04	Q	|	|	|	V|
24+15	0.9549	0.02	Q	|	|	|	V|
24+20	0.9550	0.01	Q	|	|	|	V|
24+25	0.9551	0.01	Q	|	|	|	V|
24+30	0.9551	0.01	Q	|	|	|	V|
24+35	0.9552	0.00	Q	|	|	|	V|
24+40	0.9552	0.00	Q	|	|	|	V|
24+45	0.9552	0.00	Q	|	|	|	V|
24+50	0.9552	0.00	Q	|	|	|	V

APPENDIX E

OFF-SITE HYDROLOGY (FOR BYPASS)

APPENDIX E.1
100-YEAR HYDROLOGY CALCULATIONS (OFF-SITE)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/04/22 File:100B1.out

1494-0008 INDUSTRIAL BUILDINGS
OFF SITE ANALYSIS
100-YEAR STORM EVENT
B1

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 353.000(Ft.)
Top (of initial area) elevation = 83.300(Ft.)
Bottom (of initial area) elevation = 69.700(Ft.)
Difference in elevation = 13.600(Ft.)
Slope = 0.03853 s(percent)= 3.85
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.623 min.

```
Rainfall intensity =      2.616(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      8.926(CFS)
Total initial stream area =        3.880(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            3.88 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/04/22 File:100B2.out

1494-0008 INDUSTRIAL BUILDINGS
OFF SITE ANALYSIS
100-YEAR STORM EVENT
B2

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++
Process from Point/Station 102.000 to Point/Station 103.000
**** INITIAL AREA EVALUATION ****

Initial area flow distance = 340.000(Ft.)
Top (of initial area) elevation = 82.300(Ft.)
Bottom (of initial area) elevation = 74.000(Ft.)
Difference in elevation = 8.300(Ft.)
Slope = 0.02441 s(percent)= 2.44
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 11.464 min.

```
Rainfall intensity =      2.520(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.879
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      7.816(CFS)
Total initial stream area =        3.530(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            3.53 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

APPENDIX F

REFERENCES



Map Scale: 1:2,120 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 14, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AuC	Auld clay, 2 to 8 percent slopes	C	15.1	95.2%
BkC2	Buchenau silt loam, 2 to 8 percent slopes, eroded	B	0.8	4.8%
Totals for Area of Interest			**15.8**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.7376°, Longitude: -117.2215°
Elevation: 1462.36 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.086** (0.072-0.104)	**0.123** (0.103-0.148)	**0.173** (0.144-0.210)	**0.216** (0.179-0.264)	**0.278** (0.222-0.352)	**0.329** (0.257-0.425)	**0.382** (0.291-0.508)	**0.440** (0.325-0.602)	**0.523** (0.370-0.747)	**0.591** (0.403-0.876)
10-min	**0.123** (0.103-0.149)	**0.176** (0.147-0.212)	**0.248** (0.207-0.301)	**0.310** (0.256-0.379)	**0.399** (0.318-0.505)	**0.471** (0.368-0.610)	**0.548** (0.417-0.728)	**0.631** (0.466-0.863)	**0.750** (0.530-1.07)	**0.848** (0.578-1.25)
15-min	**0.149** (0.125-0.180)	**0.213** (0.178-0.257)	**0.300** (0.250-0.364)	**0.375** (0.310-0.458)	**0.483** (0.385-0.611)	**0.570** (0.445-0.737)	**0.663** (0.504-0.880)	**0.763** (0.564-1.04)	**0.907** (0.641-1.30)	**1.02** (0.699-1.52)
30-min	**0.241** (0.202-0.291)	**0.344** (0.288-0.416)	**0.486** (0.405-0.588)	**0.607** (0.501-0.741)	**0.780** (0.623-0.988)	**0.922** (0.719-1.19)	**1.07** (0.815-1.42)	**1.23** (0.912-1.69)	**1.47** (1.04-2.10)	**1.66** (1.13-2.46)
60-min	**0.340** (0.285-0.410)	**0.484** (0.405-0.585)	**0.684** (0.570-0.829)	**0.854** (0.706-1.04)	**1.10** (0.877-1.39)	**1.30** (1.01-1.68)	**1.51** (1.15-2.01)	**1.74** (1.28-2.38)	**2.07** (1.46-2.95)	**2.34** (1.59-3.46)
2-hr	**0.508** (0.425-0.612)	**0.687** (0.574-0.829)	**0.928** (0.774-1.13)	**1.13** (0.935-1.38)	**1.42** (1.13-1.79)	**1.64** (1.28-2.13)	**1.88** (1.43-2.50)	**2.13** (1.57-2.91)	**2.48** (1.75-3.54)	**2.76** (1.88-4.09)
3-hr	**0.623** (0.522-0.752)	**0.827** (0.692-1.00)	**1.10** (0.918-1.33)	**1.33** (1.10-1.63)	**1.65** (1.31-2.09)	**1.90** (1.48-2.46)	**2.16** (1.64-2.86)	**2.43** (1.79-3.32)	**2.81** (1.99-4.01)	**3.11** (2.12-4.60)
6-hr	**0.883** (0.739-1.07)	**1.16** (0.965-1.40)	**1.52** (1.26-1.84)	**1.81** (1.50-2.22)	**2.22** (1.77-2.81)	**2.54** (1.98-3.29)	**2.87** (2.18-3.81)	**3.21** (2.37-4.39)	**3.68** (2.60-5.26)	**4.05** (2.76-6.00)
12-hr	**1.18** (0.984-1.42)	**1.54** (1.29-1.86)	**2.03** (1.69-2.46)	**2.43** (2.01-2.97)	**2.98** (2.38-3.77)	**3.40** (2.66-4.41)	**3.84** (2.92-5.10)	**4.30** (3.17-5.87)	**4.92** (3.48-7.02)	**5.41** (3.69-8.01)
24-hr	**1.54** (1.36-1.78)	**2.06** (1.82-2.38)	**2.74** (2.42-3.18)	**3.31** (2.89-3.86)	**4.08** (3.46-4.92)	**4.69** (3.89-5.77)	**5.32** (4.31-6.70)	**5.97** (4.71-7.72)	**6.87** (5.20-9.25)	**7.58** (5.55-10.6)
2-day	**1.80** (1.59-2.08)	**2.45** (2.17-2.84)	**3.33** (2.93-3.86)	**4.06** (3.55-4.74)	**5.08** (4.30-6.12)	**5.88** (4.88-7.23)	**6.71** (5.44-8.46)	**7.59** (5.99-9.82)	**8.82** (6.68-11.9)	**9.80** (7.18-13.6)
3-day	**1.92** (1.70-2.22)	**2.65** (2.34-3.07)	**3.64** (3.21-4.22)	**4.48** (3.91-5.23)	**5.65** (4.78-6.81)	**6.58** (5.46-8.10)	**7.56** (6.12-9.52)	**8.60** (6.78-11.1)	**10.1** (7.62-13.5)	**11.2** (8.23-15.6)
4-day	**2.06** (1.82-2.37)	**2.87** (2.53-3.31)	**3.97** (3.50-4.60)	**4.90** (4.29-5.73)	**6.22** (5.27-7.50)	**7.28** (6.04-8.96)	**8.39** (6.80-10.6)	**9.58** (7.56-12.4)	**11.3** (8.53-15.2)	**12.6** (9.24-17.6)

7-day	**2.30** (2.03-2.65)	**3.25** (2.87-3.76)	**4.57** (4.02-5.29)	**5.69** (4.97-6.64)	**7.28** (6.17-8.78)	**8.57** (7.11-10.5)	**9.94** (8.06-12.5)	**11.4** (9.00-14.8)	**13.5** (10.2-18.2)	**15.2** (11.1-21.2)
10-day	**2.41** (2.13-2.78)	**3.45** (3.04-3.98)	**4.88** (4.30-5.65)	**6.11** (5.34-7.13)	**7.87** (6.66-9.49)	**9.30** (7.72-11.4)	**10.8** (8.78-13.6)	**12.5** (9.84-16.1)	**14.8** (11.2-20.0)	**16.8** (12.3-23.4)
20-day	**2.83** (2.50-3.27)	**4.10** (3.62-4.74)	**5.89** (5.19-6.83)	**7.45** (6.52-8.70)	**9.73** (8.24-11.7)	**11.6** (9.64-14.3)	**13.6** (11.1-17.2)	**15.9** (12.5-20.5)	**19.1** (14.5-25.7)	**21.8** (16.0-30.4)
30-day	**3.33** (2.95-3.85)	**4.83** (4.27-5.58)	**6.97** (6.14-8.07)	**8.85** (7.73-10.3)	**11.6** (9.84-14.0)	**14.0** (11.6-17.2)	**16.5** (13.4-20.8)	**19.3** (15.2-25.0)	**23.4** (17.8-31.6)	**26.9** (19.7-37.5)
45-day	**3.88** (3.43-4.48)	**5.57** (4.92-6.43)	**8.01** (7.06-9.28)	**10.2** (8.91-11.9)	**13.5** (11.4-16.2)	**16.2** (13.5-20.0)	**19.3** (15.6-24.3)	**22.7** (17.9-29.4)	**27.9** (21.1-37.6)	**32.3** (23.6-45.0)
60-day	**4.46** (3.95-5.15)	**6.31** (5.57-7.29)	**9.01** (7.94-10.4)	**11.4** (10.0-13.4)	**15.2** (12.8-18.3)	**18.3** (15.2-22.6)	**21.9** (17.7-27.6)	**25.9** (20.4-33.5)	**32.0** (24.2-43.1)	**37.3** (27.3-51.9)

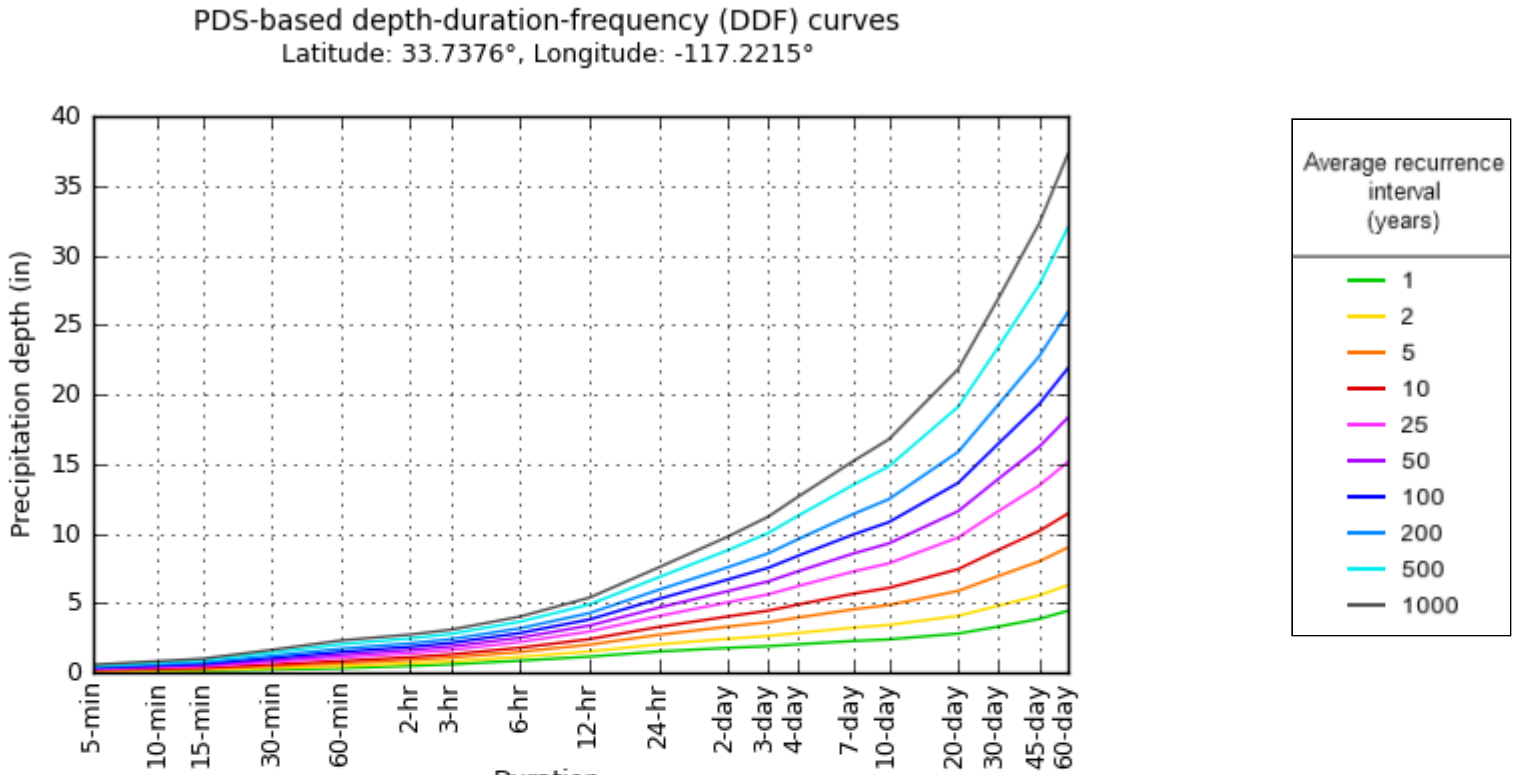
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

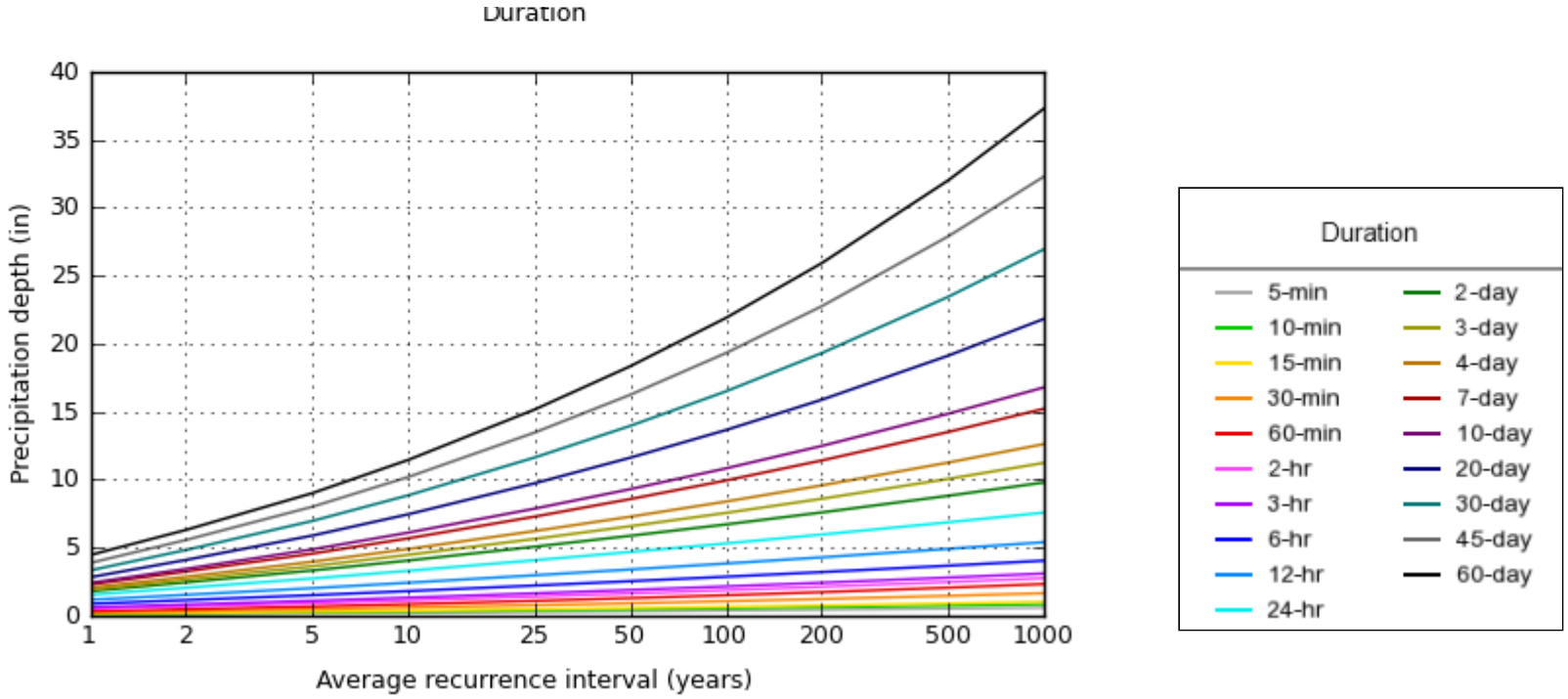
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



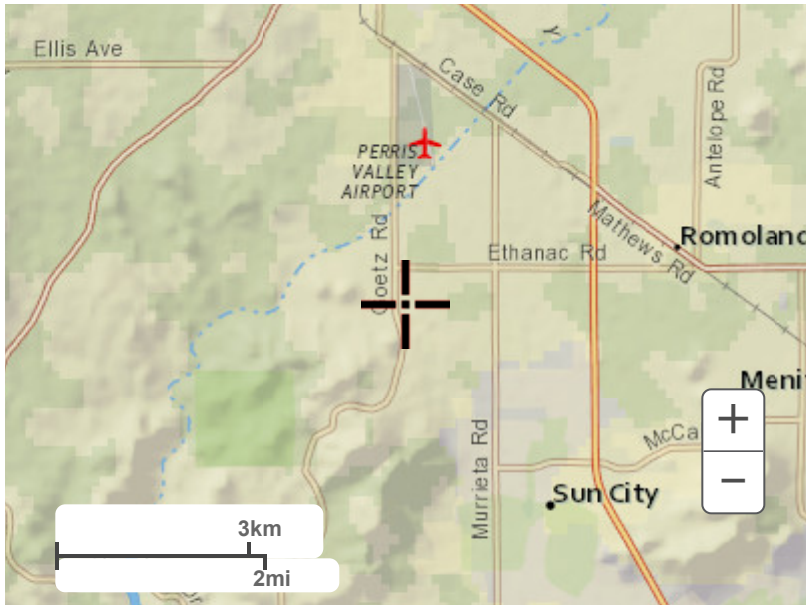


NOAA Atlas 14, Volume 6, Version 2 Created (GMT): Tue Dec 14 15:38:21 2021

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Maps & aerials

Small scale terrain



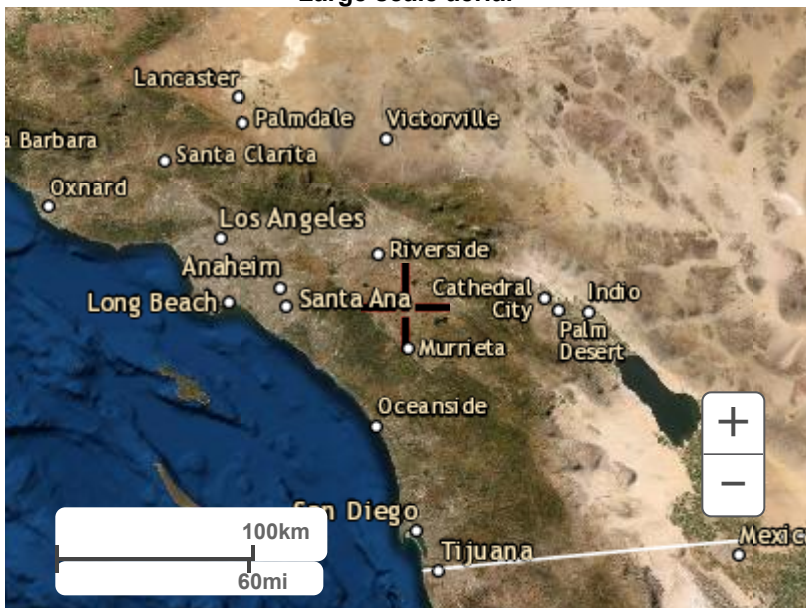
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

PLATE D-5.5 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

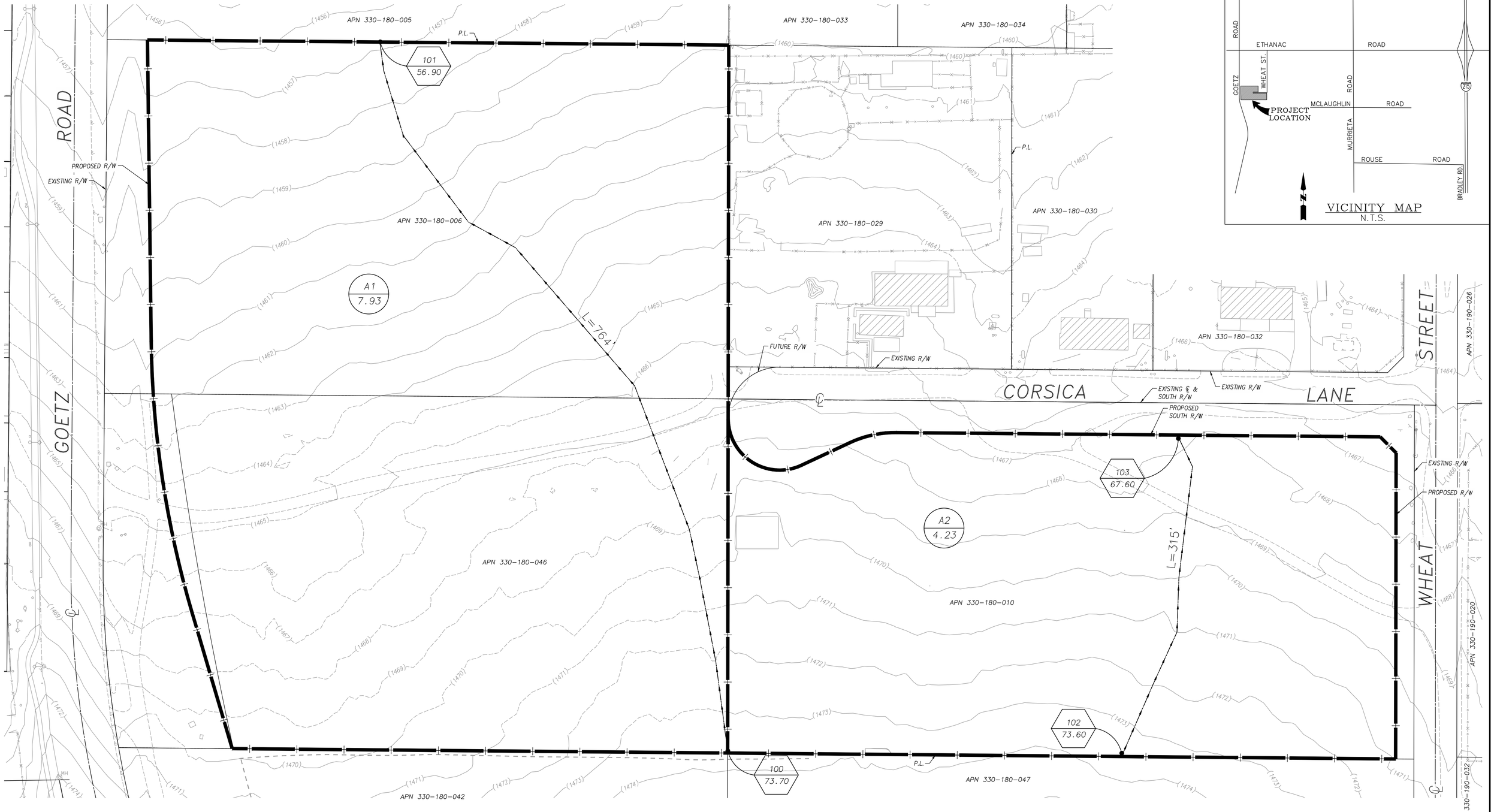
3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

EXHIBIT A

HYDROLOGY MAP (EXISTING CONDITION; RATIONAL METHOD)



LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

N

GRAPHIC SCALE

40 0 20 40 80

1" = 40'

EXHIBIT "A"

RATIONAL METHOD

HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES

EXISTING CONDITION

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

Drawing Name: G:\1494-0008 CORE, Goetz Rd, Menifee\Study Drainage\Hydrology Maps\1494-0008 HYDROLOGY MAP.dwg
Last Updated: Nov 09, 2022 - 1:12pm by cfigueroa

EXHIBIT B

HYDROLOGY MAP (PROPOSED CONDITION; RATIONAL METHOD)

PROPOSED UNDER SIDEWALK DRAIN

PROPOSED SUMP & PUMP TO UNDER SIDEWALK DRAIN

APN 330-180-005

101
59.30

P.L.

APN 330-180-033

APN 330-180-034

PROPOSED MODULAR WETLAND

PROPOSED UNDERGROUND DETENTION BASIN (51.65 BOTTOM)

ROAD

PROPOSED R/W

EXISTING R/W

APN 330-180-006

APN 330-180-029

APN 330-180-030

P.L.

PROPOSED CURB, GUTTER, AND SIDEWALK

A1
7.93

APN 330-180-032

FUTURE R/W

EXISTING R/W

STREET

APN 330-190-026

GOETZ

CORSICA

LANE

PROPOSED CURB, GUTTER, AND SIDEWALK

PROPOSED SUMP & PUMP TO MODULAR WETLANDS

PROPOSED MODULAR WETLAND

EXISTING ℄ & SOUTH R/W

EXISTING R/W

PROPOSED SOUTH R/W

PROPOSED UNDER SIDEWALK DRAIN

1005
1467.82

PROPOSED SUMP & PUMP TO UNDER SIDEWALK DRAIN

EXISTING R/W

PROPOSED R/W

L=948'

PARCEL 1
PROPOSED 154,831 SF BUILDING
64.20-67.00FF

103
65.50

PROPOSED UNDERGROUND DETENTION BASIN (54.75 BOTTOM)

APN 330-180-046

A2
4.23

APN 330-180-010

PARCEL 2
PROPOSED 80,090 SF BUILDING
70.65-71.65FF

102
71.60

L=750'

WHEAT

APN 330-190-020

PROPOSED CURB, GUTTER, AND SIDEWALK

PROPOSED UNDER SIDEWALK DRAIN

FUTURE CURB, GUTTER, AND SIDEWALK

FUTURE CURB, GUTTER, AND SIDEWALK

100
66.85

PROPOSED UNDER SIDEWALK DRAIN

PROPOSED CONCRETE CHANNEL FOR OFF-SITE BYPASS

APN 330-180-042

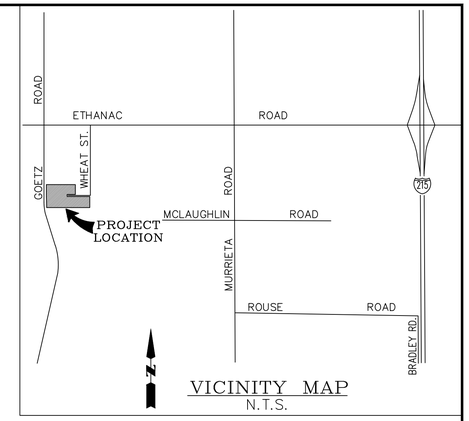
P.L.

APN 330-180-047

PROPOSED CONCRETE CHANNEL FOR OFF-SITE BYPASS

APN 330-190-032

℄



VICINITY MAP
N.T.S.

LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

PROPOSED SIDEWALK

PROPOSED PAVING

N

GRAPHIC SCALE
40 0 20 40 80
1" = 40'

EXHIBIT "B"
RATIONAL METHOD HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES PROPOSED CONDITION

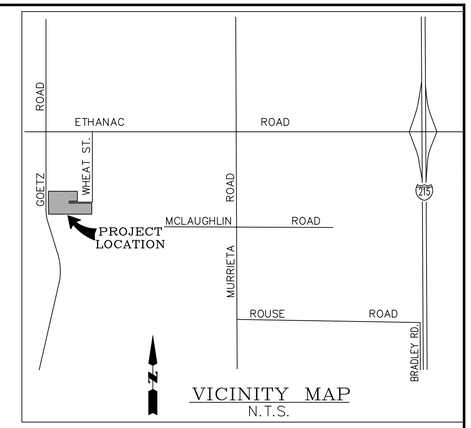
CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

Drawing Name: G:\1494-0008 CDFE Goetz Rd, Menifee\Study Drainage\Hydrology Maps\1494-0008 HYDROLOGY MAP.dwg
Last Updated: Nov 09, 2023 - 1:08pm by rfigueroa

EXHIBIT C

HYDROLOGY MAP (OFF-SITE; RATIONAL METHOD)





LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

N

GRAPHIC SCALE

40 0 20 40 80

1" = 40'

EXHIBIT "C"

RATIONAL METHOD HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES EXISTING CONDITION - OFF SITE

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

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APPENDIX I2

CORSICA WATER QUALITY MANAGEMENT PLAN

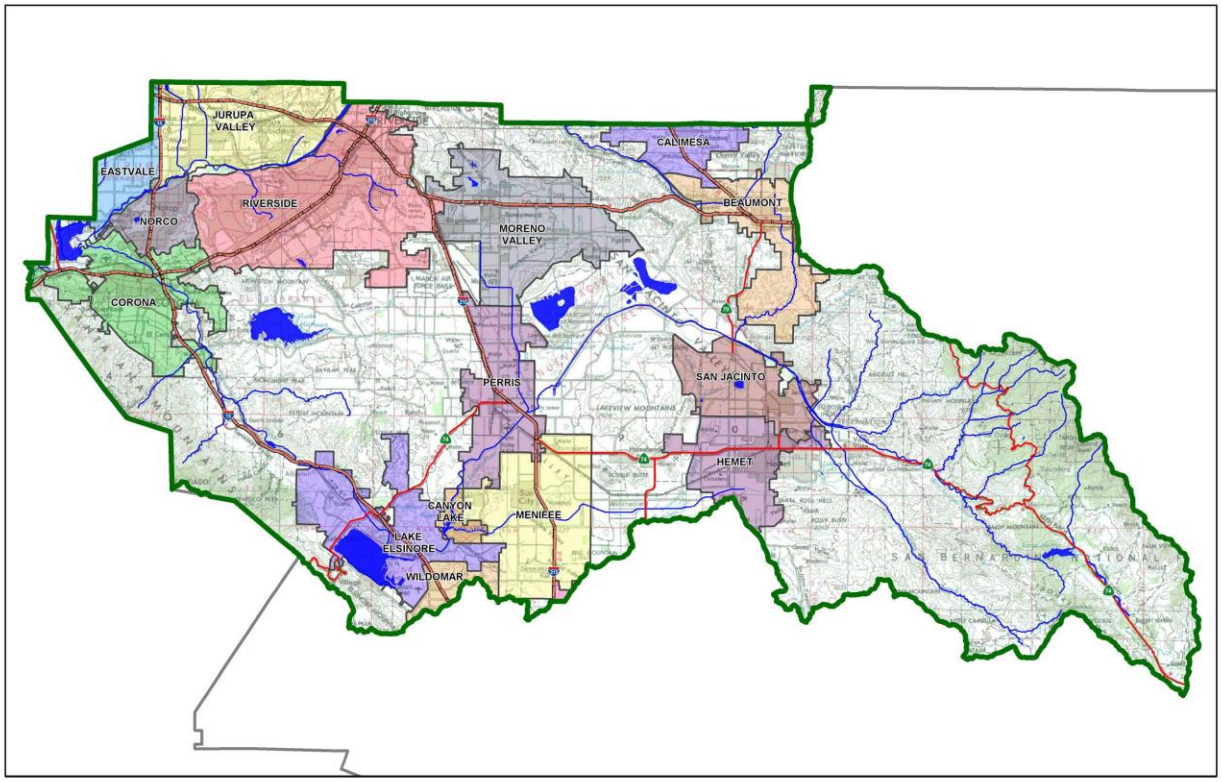
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Goetz Road, Menifee Industrial Buildings

Development No: TBD

Design Review/Case No: WQ-0293



☒ **Preliminary**
☐ **Final**

Original Date Prepared: March 8, 2022

Revision Date(s): July 2, 2022
April 3, 2023
November 14, 2023

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

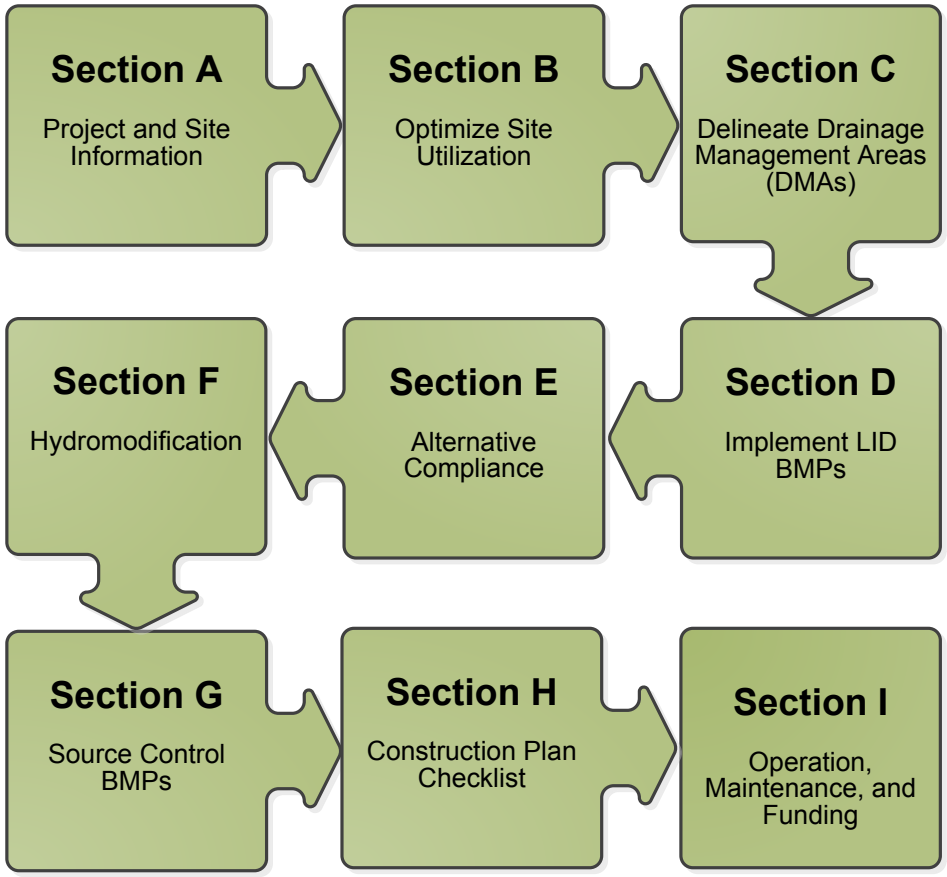
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Attn: Chris Sidor, PE

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 Mark Bachli by CASC Engineering and Consulting for the Goetz Road, Menifee Industrial Buildings.

This WQMP is intended to comply with the requirements of Riverside County for Ordinance No. 754.2 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 Riverside County Water Quality Ordinance (Municipal Code Section 13.12).

"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
Mark Bachli	
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
Chris Sidor, PE	Project Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: C90500

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Industrial
Planning Area:	N/A
Community Name:	Menifee
Development Name:	Goetz Road, Menifee Industrial Buildings
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°44'13.59"N, 117°13'20.27" W	
Project Watershed and Sub-Watershed: Santa Ana & San Jacinto	
Gross Acres: 12.16 Acres APN(s): 330-180-006, -010, -029, -046	
Map Book and Page No.: MB 14/91 & PM 86/31	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Industrial
Proposed or Potential SIC Code(s)	1541
Area of Impervious Project Footprint (SF)	529,477 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	449,537 SF
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)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
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)	N/A
What is the Water Quality Design Storm Depth for the project?	0.60”

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.

Project Description:

The Goetz Road, Menifee Industrial Buildings Project is located in the City of Menifee, County of Riverside, California. The site is located approximately 1,500 feet southeast of the intersection of Goetz Road and Ethanac Road in the City of Menifee. The site is bounded by single family residences on the West side of Goetz Rd and powerlines to the South. The industrial Project and associated parking and landscaping areas are approximately 14.39 acres in size. Topographically, site elevations range from approximately 1467.00 feet to 1473.00 feet above Mean Sea Level (MSL).

The majority of the project site is currently vacant and undeveloped. The existing project currently drains to the North of Goetz Rd and Wheat St. The project proposes to construct two industrial warehouse buildings of associated parking, landscape, and access points. The project will add approximately 449,537 square feet or 10.32 acres of impervious area. The project will also consist of off-site street improvements along Goetz Rd, Corsica Lane, and Wheat St.

The proposed design consists of two on-site Drainage Areas (DA). DA1 contains building 1 and has an area of 345,430 square feet or 7.93 acres. DA2 contains building 2 and has an area of 184,047 square feet or 4.23 acres. Both DAs will drain via sheet flow and/or curbs and gutters to proposed drop inlets located throughout the project. Flows captured by the drop inlet will be directed via proposed storm drain to proposed underground detention chambers. The chambers will dewater via proposed storm drains that will connect to proposed sump and pumps. The sump and pumps will pump flows to the two proposed Modular Wetlands Systems (MWS), the treated flows will be directed to a public storm drain line through the project site. Flows from DA1 will be directed North to Goetz Road, while DA2 will direct flows Northeast toward Wheat Street.

The proposed off-site street improvements will consist of curb, gutters, under sidewalk drains, street expansion and road pavements.

The proposed project will be fully addressed by LID Principles and two Modular Wetlands Systems (MWS).

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 4)	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
San Jacinto River (Reach 3)	None	AGR, GWR, REC1, REC2, WARM, WILD, MUN	N/A
Canyon Lake	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, COMM, WARM, WILD	N/A
San Jacinto River (Reach 1)	None	MUN, AGR, GWR, REC1, REC2, WARM, WILD	N/A
Lake Elsinore	Nutrients, Organic Enrichments, Low Dissolved Oxygen, PCBs, Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD, MUN	N/A

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)*	☐ 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?

Yes, the preexisting site conditions drained towards the north and into Goetz Rd and Wheat St. The planned grading will keep the same drainage pattern by conveying flows northerly into the proposed BMPs, and discharge flows northerly into Goetz Rd and Wheat St.

Did you identify and protect existing vegetation? If so, how? If not, why?

No, the site was previously mass graded and contains little to no vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

No, per the Geotechnical Report (Appendix 3) infiltration rates did not meet the BMP criteria, and therefore infiltration was determined to be infeasible. Per the BMP hierarchy in the Guidance Manual, and per a

letter from the geotechnical engineer stating infiltration rates were too low for bioretention, two Modular Wetlands Systems were selected on-site, which then use a pump and sump for off-site flows.

Did you identify and minimize impervious area? If so, how? If not, why?

No, the project proposes three large buildings and multiple parking lots so impervious area could not be minimized. Landscaped areas were added along the perimeter of the project site.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

No, due to the site being over 85% impervious dispersing runoff to pervious areas is infeasible and therefore flow through biotreatment BMPs were selected.

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 1A	Landscaping	53,244	D
DMA 1B	Buildings/ Roofs	154,831	D
DMA 1C	Asphalt Concrete	137,355	D
DMA 2A	Landscaping	26,696	D
DMA 2B	Buildings/ Roofs	80,090	D
DMA 2C	Asphalt Concrete	77,260	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)
N/A			

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]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

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	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1A	BMP 1 Modular Wetlands System (MWS)
DMA 1B	BMP 1 Modular Wetlands System (MWS)
DMA 1C	BMP 1 Modular Wetlands System (MWS)
DMA 2A	BMP 2 Modular Wetlands System (MWS)
DMA 2B	BMP 2 Modular Wetlands System (MWS)
DMA 2C	BMP 2 Modular Wetlands System (MWS)

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: All DA 1 and 2.		
…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: 1.84 Acres

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

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: 10.32 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: 0.60

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: 6.19 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)
6.19 Acres	1.94 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: 172

Project Type: Industrial

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: 10.32 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: 172

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: 1,775

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)
1,775	172

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.

N/A

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: N/A

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: N/A

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: N/A

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: N/A

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)**
N/A	N/A

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 1A	☐	☐	☐	☒	☐
DMA 1B	☐	☐	☐	☒	☐
DMA 1C	☐	☐	☐	☒	☐
DMA 2A	☐	☐	☐	☒	☐
DMA 2B	☐	☐	☐	☒	☐
DMA 2C	☐	☐	☐	☒	☐

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.

*Per the letter Dated February 16, 2022 from the Geotechnical Study, an infiltration rate of 0.27 inches per hour should be used. See Appendix 3 for clarification. Therefore, biotreatment is deemed feasible.

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	*BMP 1 – MWS*		
	[A]		[B]	[C]	[A] x [C]			
DMA 1A	*53,244*	*Ornamental Landscaping*	*0.1*	*0.11*	*5,881.2*	*Design Storm Depth (in.)*	*Design capture Volume, **VBMP** (cubic feet)*	*Proposed Volume on plans (cubic feet)*
DMA 1B	*154,831*	*Buildings/ Roofs*	*1.0*	*0.89*	138,109.3			
DMA 1C	*137,355*	*Asphalt Concrete*	*1.0*	*0.89*	*122,520.7*			
	345,430				266,511.2	0.60	13,325.6	***40,277.0***

[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

Table D.4 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	*BMP 2 – MWS*		
	[A]		[B]	[C]	[A] x [C]			
DMA 2A	*26,696*	*Ornamental Landscaping*	*0.1*	*0.11*	*2,948.8*			
DMA 2B	*80,090*	*Buildings/ Roofs*	*1.0*	*0.89*	*71,440.3*			
DMA 2C	*77,260*	*Asphalt Concrete*	*1.0*	*0.89*	*68,915.9*			
						Design Storm Depth (in.)	*Design capture Volume, **VBMP** (cubic feet)*	*Proposed Volume on plans (cubic feet)*
	184,046				143,305	0.60	7,165.3	***21,605.0***

[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

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.

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]
N/A		

[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	N/A	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	N/A	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:

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.

Underground detention chambers will be utilized to contain runoff and slowly release runoff via pump & modular wetlands system for each Drainage Area. Proposed conditions will mimic pre-existing conditions by utilization of the detention chambers and pump. See Appendix 7.

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 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	Interior floor drains will be plumbed to sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.
D1. Landscape / Outdoor Pesticide Use	Landscape plans will 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. Pest-resistant plans will be used adjacent to hardscape. The landscape plans will consider plants appropriate to the site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain landscaping only using minimum pesticides, when needed. See Appendix 10 for "Landscape and Gardening" brochure by RCFlood. Provide Integrated Pest Management (IPM) information to new owners, lessees and operators upon occupancy and annually thereafter. IPM is an effective and environmentally sensitive approach to pest management.
J. Refuse Areas	Site refuse will be handled by contractor on a weekly basis. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	A minimum of two receptacles will be provided and located indoors. Receptacles are to be inspected daily and repairs or replacements to leaky receptacles will be completed immediately. Receptacles are to remain covered when not in use. Dumping of liquid or hazardous wastes is prohibited. A "no hazardous materials" sign will be posted. Spills will be cleaned immediately upon discovery. Spill control materials will be available onsite. See Appendix 10 for CASQA fact sheet SC-34 for "Waste Handling and Disposal."

K. Industrial processes	All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.	See Appendix 10 for CASQA fact sheet SC-10 for "Non-Stormwater Discharges"
M. Loading Docks		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
O. Miscellaneous Drain or Wash Water or Other Sources Condensate Drain lines Roofing, gutters, and trim	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. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
P. Plazas, sidewalks, and parking lots		Sweep plazas, sidewalks, and parking lots monthly 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)
1	MWS	C-1	33.737613°, -117.220210°
2	MWS	C-1	33.739066°, -117.223442°

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.

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: Maintenance will be funded by owner. A complete maintenance agreement will be submitted with FWQMP.

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

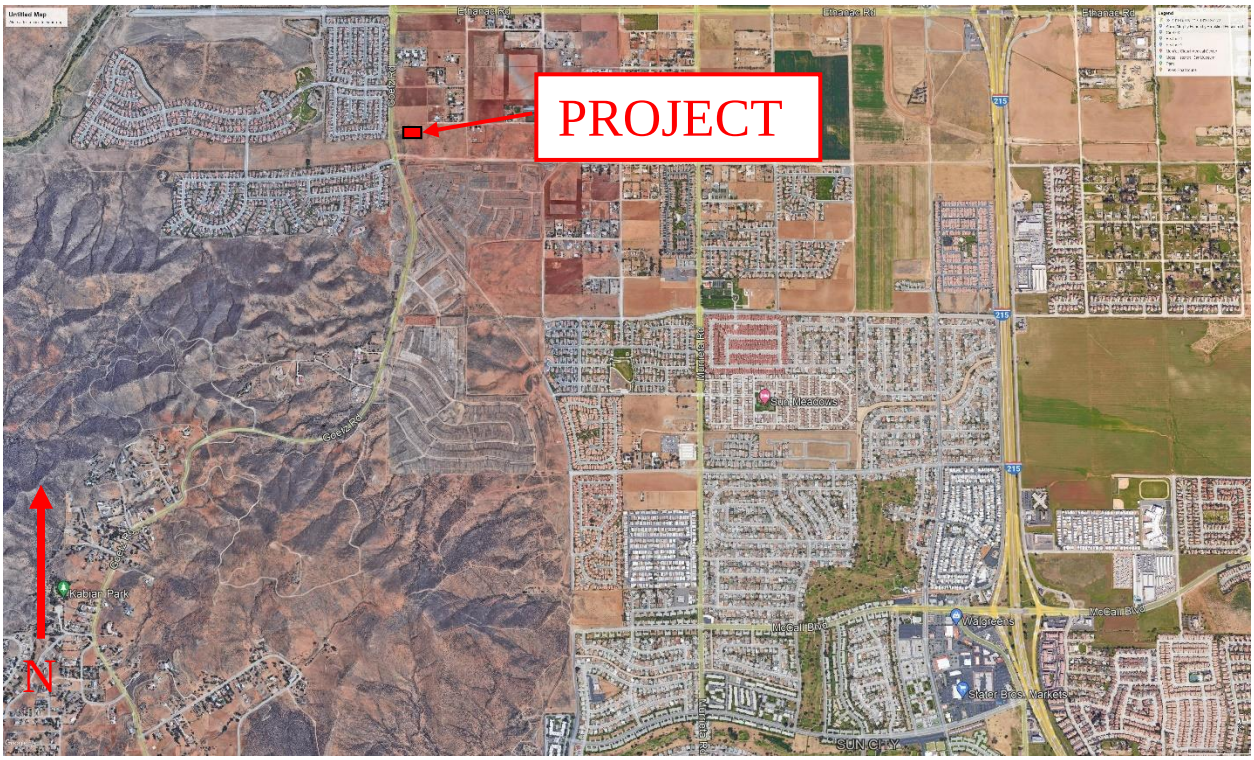
☐ Y ☒ N

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

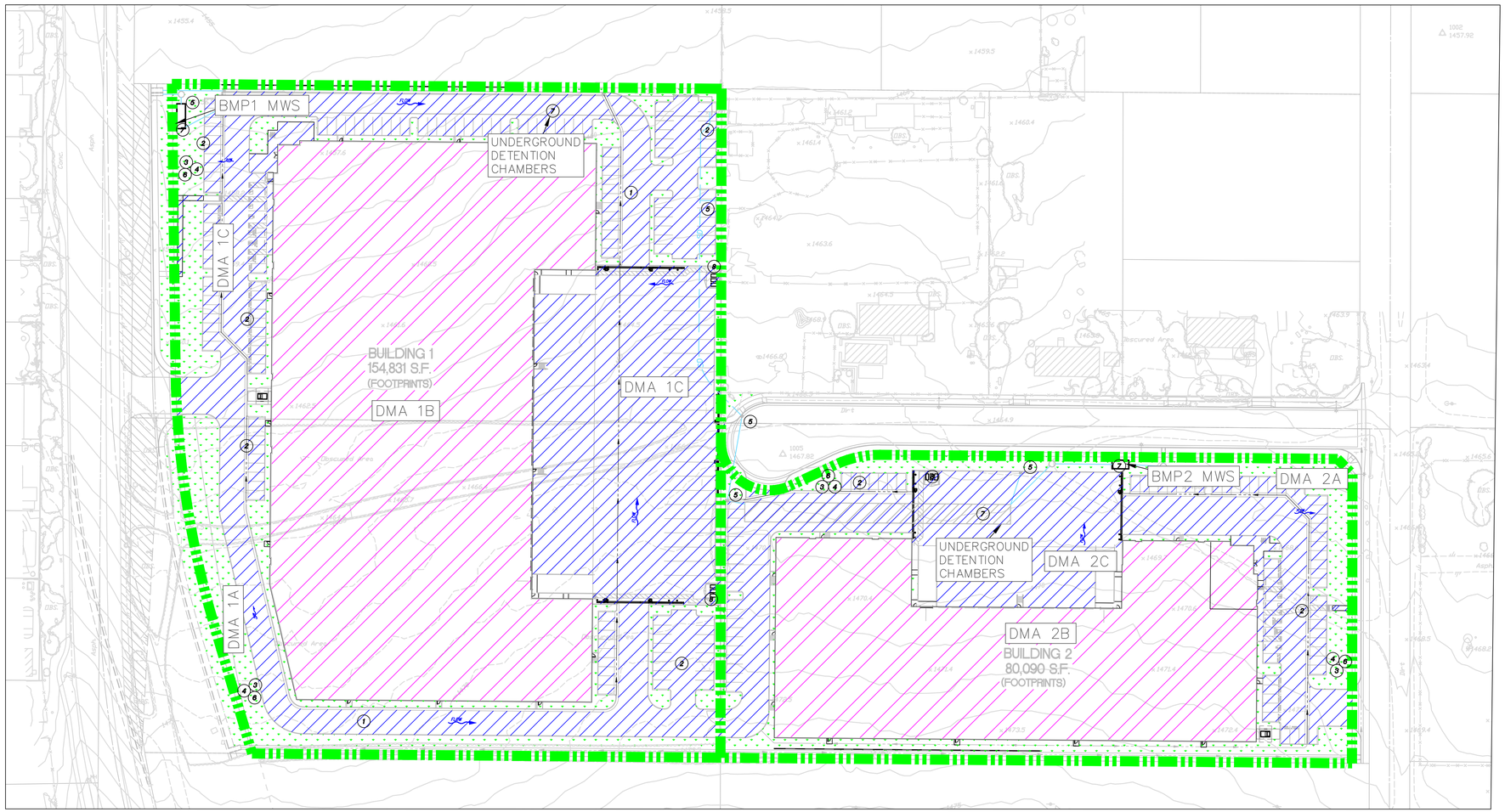
REGIONAL VICINITY MAP

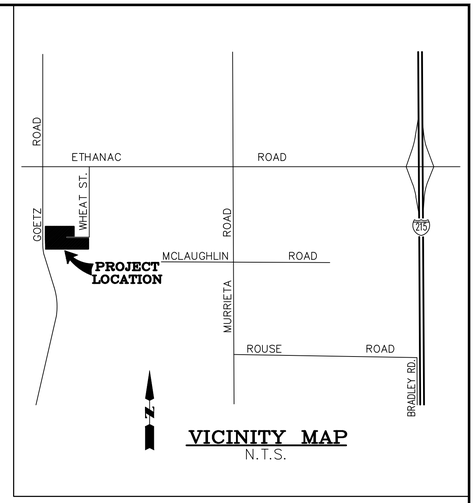




RECIEVING WATERS MAP

WATER QUALITY MANAGEMENT PLAN
GOETZ ROAD MENIFEE INDUSTRIAL BUILDINGS
APN: 330-180-006, -010, -029, -049
CITY OF MENIFEE, CA





VICINITY MAP
N.T.S.

DON'T POLLUTE NO CONTAINE!

5 SD-13 DETAIL
NOT TO SCALE

TOTAL AREAS:

IMPERVIOUS AREA:	449,537 SF	10.32 AC
PERVIOUS AREA:	79,940 SF	1.84 AC
TOTAL AREA:	529,477 SF	12.16 AC

SOURCE CONTROL BMPs

1	SC-70	ROAD AND STREET MAINTENANCE
2	SC-71	PARKING LOT CLEANING
3	SC-73	LANDSCAPE MAINTENANCE
4	SD-12	EFFICIENT IRRIGATION
5	SD-13	STORM DRAIN SIGNAGE
6	N-3	LANDSCAPE MANAGEMENT
7	N-4	BMP MAINTENANCE
8	SD-32	TRASH ENCLOSURES

LEGEND

- *DA* DRAINAGE AREA
- *DMA* DRAINAGE MANAGEMENT AREA
- DRAINAGE AREA BOUNDARY
- PARKING LOT (IMPERVIOUS) AREA
- ROOFS / BUILDING (IMPERVIOUS)
- NATURAL (SOIL TYPE A) (PERVIOUS) AREA
- FLOW DIRECTION

DMA CLASSIFICATIONS

DMA NAME	SURFACE TYPE	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	DMA TYPE	BMP TYPE
DMA 1A	LANDSCAPING	0	53,244	TYPE D	BIOTREATMENT MWS-L-8-24-V
DMA 1B	BUILDINGS/ROOFS	154,831	0	TYPE D	BIOTREATMENT MWS-L-8-24-V
DMA 1C	ASPHALT CONCRETE	137,355	0	TYPE D	BIOTREATMENT MWS-L-8-24-V
DMA 2A	LANDSCAPING	0	26,696	TYPE D	BIOTREATMENT MWS-L-8-16-V
DMA 2B	BUILDINGS/ROOFS	80,090	0	TYPE D	BIOTREATMENT MWS-L-8-16-V
DMA 2C	ASPHALT CONCRETE	77,260	0	TYPE D	BIOTREATMENT MWS-L-8-16-V

N

60 0 30 60 120
1" = 60'

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cel-casc.com

Drawing Name: G:\1494-0008 CORE, Goetz Rd, Menifee\WQS\CAD\1494-0008 WQMP.dwg
Last Updated: Nov 14, 2022 - 11:16am by kjimenez

Appendix 2: Construction Plans

Grading and Drainage Plans

LEGAL DESCRIPTION

PARCEL A: (APN: 330-180-006)
LOT(S) 785 OF ROMOLA FARMS NO. 9, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 14, PAGE(S) 91 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.

PARCEL B: (APN: 330-180-010)
LOT 782 OF ROMOLA FARMS NO. 9, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA; AS PER MAP RECORDED IN BOOK 14 PAGE 91 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF SAID COUNTY.
EXCEPT FROM SAID LOT 782, THE PORTION THEREOF CONTAINED IN A 60 FOOT WIDE STRIP OF LAND MEASURED AT RIGHT ANGLE AND MORE PARTICULARLY DESCRIBED AS 30 FEET WIDE ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTER LINES: BEGINNING AT A POINT ON TH SOUTH LINE OF SECTION 17, TOWNSHIP 5 SOUTH, RANGE 3 WEST, FROM WHICH POINT THE SOUTHWEST CORNER BEARS NORTH 89° 16' 30" WEST, A DISTANCE OF 71.86 FEET; THENCE NORTH 33° 34' EAST, A DISTANCE OF 63.80 FEET; THENCE NORTHEASTERLY ON THE ARC OF A 600 FOOT RADIUS CURVE, CONCAVE TO THE NORTHWEST, THROUGH AN ANGLE OF 20°42' FOR AN ARC DISTANCE OF 216.77 FEET; THENCE NORTH 12° 52' EAST, A DISTANCE OF 962.05 FEET; THENCE NORTHERLY ON THE ARC OF A 1000 FOOT RADIUS CURVE CONCAVE TO THE WEST, THROUGH AN ANGLE OF 23° 51' FOR AN ARC DISTANCE OF 416.26 FEET; THENCE NORTH 10° 59' WEST A DISTANCE OF 144.23 FEET; THENCE NORTHWESTERLY ON THE ARC OF A 2000 FOOT RADIUS CURVE CONCAVE TO THE SOUTHWEST THROUGH AN ANGLE OF 06° 09' FOR AN ARC DISTANCE OF 214.88 FEET; THENCE NORTH 17° 09' WEST FOR A DISTANCE OF 921.88 FEET; THENCE NORTHERLY ON THE ARC OF A 1000 FOOT RADIUS CURVE, CONCAVE TO THE EAST, THROUGH AN ANGLE OF 17°29' FOR AN ARC OF 305.14 FEET TO A POINT ON THE WEST LINE OF SAID SECTION 17, FROM WHICH POINT THE WEST QUARTER CORNER BEARS SOUTH 00° 21' WEST, A DISTANCE OF 500.42 FEET; THENCE ALONG THE WEST LINE OF SAID SECTION 17 TO THE NORTHWEST CORNER THEREOF AS CONVEYED TO THE COUNTY OF RIVERSIDE BY DEED RECORDED SEPTEMBER 27, 1950 IN BOOK 1207, PAGE 293, OFFICIAL RECORDS.

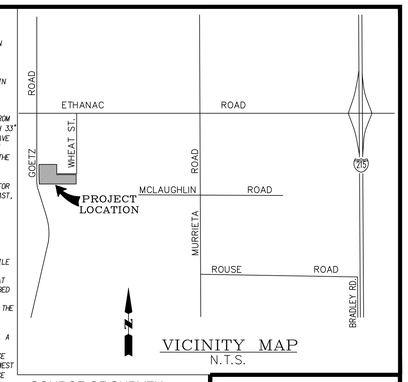
PARCEL D: (APN: 330-180-046)
LOT 781 OF ROMOLA FARMS NO. 9, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 14, PAGE 91 OF MAPS, RECORDS OF RIVERSIDE COUNTY, CALIFORNIA.
EXCEPT FROM SAID LOT 781 THE PORTION THEREOF, CONTAINED IN A 60.00 FOOT SIDE STRIP OF LAND MEASURED AT RIGHT ANGLES AND MORE PARTICULARLY DESCRIBED AS 30.00 FEET WIDE ON EACH SIDE OF THE FOLLOWING DESCRIBED CENTER LINES:
BEGINNING AT A POINT ON THE SOUTH LINE OF SECTION 17, TOWNSHIP 5 SOUTH RANGE 3 WEST FROM WHICH POINT THE SOUTHWEST CORNER BEARS NORTH 89° 16' 20" WEST, DISTANCE OF 71.86 FEET; THENCE NORTH 33° 34' EAST A DISTANCE OF 63.80 FEET; THENCE NORTHEASTERLY ON THE ARC OF 600.00 FOOT RADIUS CURVE, CONCAVE, TO THE NORTHWEST, THROUGH AN ANGLE OF 20° 42' FOR AN ARC DISTANCE OF 216.77 FEET; THENCE NORTH 12° 52' EAST, A DISTANCE OF 962.05 FEET; THENCE NORTHERLY ON THE ARC OF A 1,000.00 FOOT RADIUS CURVE CONCAVE, TO THE WEST, THROUGH AN ANGLE OF 23° 51' FOR ARC DISTANCE OF 416.26 FEET; THENCE NORTH 10° 59' WEST, DISTANCE OF 144.23 FEET; THENCE NORTHWESTERLY ON THE ARC OF A 2,000.00 FOOT RADIUS CURVE CONCAVE TO THE SOUTHWEST THROUGH AN ANGLE OF 06° 09' FOR AN ARC DISTANCE OF 214.88 FEET; THENCE NORTH 17° 08' WEST FOR DISTANCE OF 921.88 FEET; THENCE NORTHERLY ON THE ARC OF A 1,000.00 FOOT RADIUS CURVE, CONCAVE TO THE EAST, THROUGH AN ANGLE 17° 29' FOR AN ARC DISTANCE OF 305.14 FEET TO A POINT ON THE WEST LINE OF SAID SECTION 17, FROM WHICH POINT THE WEST QUARTER CORNER BEARS SOUTH 00° 21' WEST, DISTANCE OF 500.42 FEET; THENCE ALONG THE WEST LINE OF SAID SECTION 17 TO THE NORTHWEST CORNER THEREOF AS CONVEYED TO COUNTY OF RIVERSIDE BY DEED RECORDED SEPTEMBER 27, 1950, BOOK 1207, PAGE 293, OFFICIAL RECORDS.

SOURCE OF SURVEY

AERIAL SURVEY
DATED NOVEMBER 2021
AS CONDUCTED BY:
INLAND AERIAL SURVEYS, INC.
7117 ARLINGTON AVE. SUITE A
RIVERSIDE, CA 92503
PHONE: (951) 687-4252

EASEMENTS

1. AN EASEMENT FOR POLE LINES AND INCIDENTAL PURPOSES, IN FAVOR OF SOUTHERN SIERRAS POWER COMPANY, RECORDED MAY 11, 1928 IN BOOK 765 OF DEEDS, PAGE 185.
2. AN EASEMENT FOR PUBLIC UTILITIES AND INCIDENTAL PURPOSES, IN FAVOR OF RIVERSIDE COUNTY, RECORDED DECEMBER 19, 1980 AS PARCEL MAP NO 14619, IN BOOK 86, PAGE 31 OF PARCEL MAPS, RECORDS OF RIVERSIDE COUNTY.
3. AN EASEMENT FOR PUBLIC ROAD AND DRAINAGE AND INCIDENTAL PURPOSES, IN FAVOR OF RIVERSIDE COUNTY, RECORDED DECEMBER 27, 2005 AS INSTRUMENT NO. 2005-1062881 OF OFFICIAL RECORDS.



VICINITY MAP
N.T.S.

PARCEL 1
PROPOSED 154,831 SF BUILDING
64.20-67.00FF

PARCEL 2
PROPOSED 80,090 SF BUILDING
70.65-71.65FF

GRAPHIC SCALE
40 0 20 40 80
1" = 40'

LEGEND

1330	PROPOSED CONTOUR
(1330)	EXISTING CONTOUR
2.30%	PROPOSED GRADE
℄	CENTERLINE
HP	HIGH POINT
R/W	RIGHT OF WAY
P.L.	PROPERTY LINE
GB	GRADE BREAK
TC	TOP OF CURB
TG	TOP OF GRATE
FS	FINISH SURFACE
FL	FLOWLINE
XX.XX	PROPOSED ELEVATION
(XX.XX)	EXISTING ELEVATION
	PROPOSED SIDEWALK
	PROPOSED PAVING
	PROPOSED STREET LIGHT
	EXISTING STREET LIGHT

UTILITY NOTIFICATION

FRONTIER COMMUNICATIONS
9 S. 4TH STREET
REDLANDS, CA 92373
PHONE: (909) 748-6676

CHARTER COMMUNICATIONS
7337 CENTRAL AVENUE
RIVERSIDE, CA 92504
PHONE: (951) 406-1666

SOUTHERN CALIFORNIA GAS COMPANY
1981 WEST LUGONIA AVENUE
REDLANDS, CA 92373
PHONE: (909) 335-7550

SOUTHERN CALIFORNIA EDISON
26100 MENIFEE ROAD
ROMOLAND, CA 92585
PHONE: (951) 928-8334

EASTERN MUNICIPAL WATER DISTRICT
2270 TRUMBLE ROAD
PERRIS, CA 92572
PHONE: (951) 928-3777

ESTIMATED RAW EARTHWORK QUANTITIES

BASE SURFACE:	1494-0008 EG
COMPARISON SURFACE:	1494-0008 PR
CUT VOLUME (UNADJUSTED)	41,400 CU. YD.
FILL VOLUME (UNADJUSTED)	21,000 CU. YD.

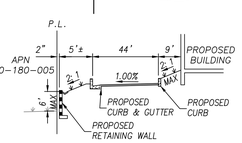
NOTE: SITE IS EXPECTED TO BALANCE AFTER LOSSES.

GENERAL NOTES

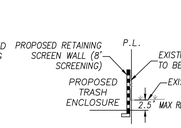
1. ASSESSOR'S PARCEL NUMBER: 330-180-006, 010, 046
2. EXISTING GROSS AREA: 594,818 SF = 13.66 AC
3. EXISTING NET USABLE AREA: 565,916 SF = 12.99 AC
4. PROPOSED GROSS AREA: 529,477 SF = 12.16 AC
5. PROPOSED NET USABLE AREA: 529,477 SF = 12.16 AC
6. PROPOSED STREET DEDICATION AREA: 65,342 SF = 1.50 AC
7. PROPOSED EASEMENT VACATION: 4,512 SF = 0.10 AC
8. EXISTING ZONE DESIGNATION: ECONOMIC DEVELOPMENT CORRIDOR-NORTHERN GATEWAY
9. PROPOSED ZONE DESIGNATION: ECONOMIC DEVELOPMENT CORRIDOR-NORTHERN GATEWAY
10. EXISTING LAND USE: VACANT
11. PROPOSED LAND USE: WAREHOUSE / OFFICE
12. PROJECT SITE IS LOCATED WITHIN ZONE "X" - 'AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN' AS PER FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 06065C2055H, DATED AUGUST 18, 2014.*
13. CONTIGUOUS OWNERSHIP
14. TPM 38389
15. THE LAND IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
16. THE SITE HAS VERY LOW POTENTIAL FOR LIQUEFACTION.
17. SITE IS LOCATED WITHIN AN ADDITIONAL SURVEY AREA FOR BURROWING OWLS.
18. SITE IS NOT LOCATED IN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.



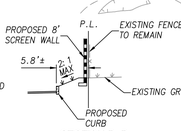
SECTION A-A
NTS



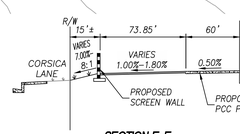
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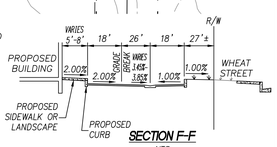
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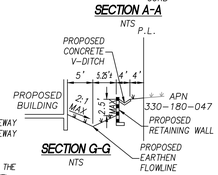
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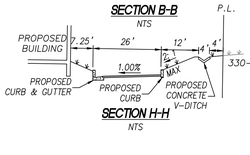
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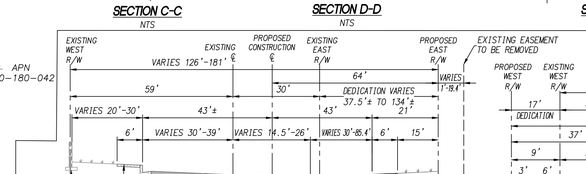
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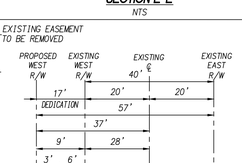
SECTION G-G
NTS



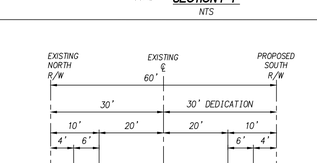
SECTION H-H
NTS



TYPICAL SECTION (SECTION I-I)
ARTERIAL (4-LANE)
GOETZ ROAD - FACING NORTH
NTS



TYPICAL SECTION
MODIFIED INDUSTRIAL COLLECTOR
WHEAT STREET - FACING NORTH
NTS



TYPICAL SECTION
GENERAL LOCAL
CORSICA LANE - FACING EAST
NTS

BENCHMARK

NATIONAL GEODETIC SURVEY CORS STATION DESIGNATION "MJFP_SCGN_CS1998 CORS ARP" PID "AI9664" ELEVATION: 1661.92' "NAVD 88" © 2019 ADJUSTMENT

BASIS OF BEARING

CALIFORNIA STATE PLANE COORDINATE SYSTEM, ZONE 6 TAKEN BETWEEN NATIONAL GEODETIC SURVEY CONTROL CORS STATION DESIGNATION "MJFP_SCGN_CS1998 CORS ARP" PID "AI9664" AND "MJFT_SCGN_CS1998 CORS ARP" PID "DH7093"

BEING N31°22'20"W, NAD 83, EPOCH 2010

PREPARED FOR/APPLICANT:
CDRE HOLDINGS 20 LLC
ATTN: MARK BUCHELI
999 N. PACIFIC COAST HWY, SUITE 580
EL SEGUNDO, CA 90245
(310) 426-5322
mbucheli@cdre.com

PROPERTY OWNER:
APN 330-180-010 & 046
ATTN: CDRE HOLDINGS 20 LLC
EL SEGUNDO, CA 90245
APN 330-180-006
ATTN: [illegible]
ONTARIO, CA 91762

MIE SHANG LIN, P.E. (AZ) 39410
LIN ENGINEERING
ONTARIO, CA 91762

SEALS:
REGISTERED PROFESSIONAL ENGINEER
PATRICK C. LAMAGNA JR.
NO. C 086046
CIVIL
STATE OF CALIFORNIA

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH: (909) 783-0101 FAX (909) 783-0108
www.cascinc.com

CONCEPTUAL GRADING PLAN

GOETZ ROAD / CORSICA LANE
INDUSTRIAL BUILDINGS
CDRE HOLDINGS 20 LLC.
APN 330-180-006, 010, 029, 046
CITY OF MENIFEE

11/29/23 16:12

CGP

S:\1494-0008 CDRE, Goetz Rd, Menifee\Engineering\Conceptual Grading\1494-0008 CGP.dwg

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

February 16, 2022

Compass Danbe Real Estate Partners II, LLC
8151 Auto Drive
Riverside, California 92504

Project No. 23758.11

Attention: Mr. Mark Bachli

Subject: Clarification Regarding Infiltration Feasibility, Proposed Industrial Development, APNs 330-180-006, -010, -029, and -046, Menifee, California

Reference: Preliminary Geotechnical and Infiltration Feasibility Investigation, Proposed Industrial Development, APNs 330-180-006, -010, -029,and -046, Menifee, California.

At the request of Mr. Anthony Mistretta of CASC Engineering & Consulting, we have prepared this letter to clarify the recommended clear water infiltration rate for the subject project included within our reported referenced above.

We recommend the use of the more conservative, slower rate within each of the two areas tested. Therefore, for the area tested within the northwest portion of the site (APN 330-180-006), a clear water design infiltration rate of 0.08 inches per hour is recommended. For the area within the southeast portion of the site (APN 330-180-010), a clear water rate of 0.27 inches per hour is recommended.

We trust this information is as requested. Should you have any questions, please do not hesitate to contact our office.

Respectfully submitted,
LOR Geotechnical Group, Inc.



John P. Leuer, GE 2030
President

Distribution: Addresse via email mark@cdrepartners.com
cc: Vicky Valenzuela via email vicky@cdrepartners.com
Anthony Mistretta via email amistretta@cascinc.com

GOETZ ROAD

WHEAT STREET

CORSICA LANE

TEST 8' BELOW EXISTING GRADE

P-4 / 0.08 in/hr

P-3 / 0.54 in/hr

TEST 7' BELOW EXISTING GRADE

APN 330-180-006

BUILDING 1
159,502 S.F.

BUILDING 3
35,459 S.F.

APN 330-180-029

APN 330-180-046

APN 330-180-010

P-1 / 1.24 in/hr

P-2 / 0.27 in/hr

TEST 10' BELOW EXISTING GRADE

TEST 9' BELOW EXISTING GRADE

BUILDING 2
89,156 S.F.

PROPERTY LINE

GRAPHIC SCALE
40' 0 20' 40' 80' 120'
SCALE: 1" = 40'

12/03/2021

INFILTRATION LOCATION EXHIBIT
APN 330-180-006, 010, 029, 049
GOETZ ROAD / CORSICA LN.
CITY OF MENIFEE

CASC
Engineering and Consulting
14010 Poway Road, Suite A, Poway, CA 92064
PH (858) 748-0101 FAX (858) 748-0105
www.cascengineering.com

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

PRELIMINARY GEOTECHNICAL AND INFILTRATION FEASIBILITY INVESTIGATION PROPOSED INDUSTRIAL DEVELOPMENT APNs 330-180-006, -010, -029, AND -046 MENIFEE, CALIFORNIA

PROJECT NO. 23758.1
DECEMBER 30, 2021

Prepared For:

Compass Danbe Real Estate Partners LLC
523 Main Street
El Segundo, California 90245

Attention: Mr. Mark Bachli

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

December 30, 2021

Compass Danbe Real Estate Partners LLC
8151 Auto Drive
Riverside, California 92504

Project No. 23758.1

Attention: Mr. Mark Bachli

Subject: Preliminary Geotechnical and Infiltration Feasibility Investigation, Proposed Industrial Development, APNs 330-180-006, -010, -029,and -046, Menifee, California.

LOR Geotechnical Group, Inc., is pleased to present this report of our geotechnical investigation for the subject project. In summary, it is our opinion that the proposed development is feasible from a geotechnical perspective, provided the recommendations presented in the attached report are incorporated into design and construction. However, the contents of this summary should not be solely relied upon.

To provide adequate support for the proposed structures, we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. Any undocumented fill material and any loose alluvial materials should be removed from structural areas and areas to receive engineered compacted fills. The data developed during this investigation indicates that removals on the order of approximately 2 to 3 feet will be required from currently planned development areas. The given removal depths are preliminary and the actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Low expansion potential, poor R-value quality, and negligible soluble sulfate content generally characterize the onsite materials tested. Near completion and/or at the completion of site grading, additional foundation and subgrade soils should be tested, as necessary, to verify their expansion potential, soluble sulfate content, and R-value quality.

Non-conducive infiltration rates were obtained for the soils tested.

LOR Geotechnical Group, Inc.

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LABORATORY TESTING PROGRAM.. . . . . . **4**

GEOLOGIC CONDITIONS. **4**
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- Site Geologic Conditions. 5
- Groundwater Hydrology. 6
- Mass Movement.. 7
- Faulting. 7
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INTRODUCTION

During December of 2021, a Preliminary Geotechnical and Infiltration Feasibility Investigation was performed by LOR Geotechnical Group, Inc., for the proposed industrial development of Assessor's Parcel Numbers (APNs) 330-180-006, -010, -029, and -046, Menifee, California. The purpose of this investigation was to provide a technical evaluation of the geologic setting of the site and to provide geotechnical design recommendations for the proposed development. The scope of our services included:

- Review of available geotechnical literature, reports, maps, and agency information pertinent to the study area;
- Interpretation of aerial photographs of the site and surrounding regions dated 1966 through 2021;
- Geologic field reconnaissance mapping to verify the aerial distribution of earth units and significance of surficial features as compiled from documents, literature, and reports reviewed;
- A subsurface field investigation to determine the physical soil conditions pertinent to the proposed development;
- Percolation testing via the borehole test method;
- Laboratory testing of selected soil samples obtained during the field investigation;
- Development of geotechnical recommendations for site grading and foundation design; and
- Preparation of this report summarizing our findings, and providing conclusions and recommendations for site development.

The approximate location of the site is shown on the attached Index Map, Enclosure A-1, within Appendix A.

PROJECT CONSIDERATIONS

To orient our investigation at the site, a Site Plan prepared by CASC Engineering and Consulting, dated December 3, 2021, was furnished for our use. The existing site conditions and proposed building configurations, associated driveways, parking, and landscape areas were indicated on this plan. The Site Plan was utilized as a base map for

our field investigation and is presented as Enclosure A-2, within Appendix A. As noted on the site plan, development of the site will include three industrial type structures; a 159,502± square foot building with nineteen (19) dock doors, a 89,156± square foot building with eleven (11) dock doors, and a 35,459± square foot building with four (4) dock doors with the remainder of the property to be used for driveways, parking, and landscape areas. The buildings are anticipated to be of concrete, masonry, or similar type construction and light to moderate foundation loads are anticipated with these structures.

Infiltration is proposed via underground chamber type systems. Depths and locations were provided by CASC Engineering and Consulting.

Grading plans have not yet been developed. However, based on the current topography of the site and adjacent areas, minor cuts and fills are anticipated to create level surfaces for the proposed development.

AERIAL PHOTO ANALYSIS

The aerial photographs reviewed consisted of vertical aerial photograph images of varying scales. We reviewed imagery available from Google Earth Pro (2021) computer software and from online Historic Aerials (2021).

To summarize briefly, the site was vacant land utilized for dry land farming since 1966, the earliest photograph available, until the 2002 photograph. The 2002 photograph shows the western approximate one-third of APN 330-180-010 was fenced and contained a small structure, perhaps a residence (mobile home) in the eastern portion. In the 2003 photograph, the residence was no longer present on APN 330-180-010, however, a large slab was present in the western portion and cars and other small items were present. The existing residence on APN 330-180-029 was also present in the 2003 photograph. By 2005, the fencing, cars, and other items were no longer present on APN 330-180-010. The 2009 photograph shows two additional outbuildings, one just south of the existing residence and one along the northern property line are present on APN 330-180-029. Numerous shade structures and animal pens are present along the western boundary of APN 330-180-029 in the 2018 photograph. No evidence for the presence of faults traversing the site area or mass movement features was noted during our review of the photographs covering the site and nearby vicinity.

EXISTING SITE CONDITIONS

The approximate 14-acre site is located within the northwestern portion of the city of Menifee, California. It consists of mostly vacant land. The exception is the previously noted large concrete slab along the far western portion of APN 330-180-010 and the residence, outbuildings, shade structures, and animal pens on APN 330-180-029. A water well is also present on APN 330-180-029. Details regarding the depth of the well and the depth to water are not known. The property is partially situated along the south and west side of Corsica Lane, an unimproved roadway, along the east side of Goetz Road, a partially improved roadway, and partially along the west side of Wheat Street, an unimproved roadway. Concrete K-rails are present along the south side of APN 330-180-046. Very sparse weeds cover the undeveloped portions of the site. Several large trees are present within the developed residential portion of the site (APN 330-180-029). The undeveloped areas of the site were recently disced. Topographically, the site is planar with a gentle fall to the north-northwest.

Power lines and vacant land bound the site on the south. A tract of single family homes is present to the west of Goetz Road. Large lot residential properties and vacant land lie north, northeast, and east of the site.

SUBSURFACE FIELD INVESTIGATION

Our subsurface field exploration program was conducted on December 6 and 7, 2021. The work consisted of advancing a total of 12 exploratory borings using a truck-mounted drill rig equipped with 8-inch diameter hollow stem augers. The approximate locations of our exploratory borings are presented on Enclosure A-2, within Appendix A.

The subsurface conditions encountered in the exploratory borings were logged by a geologist from this firm. The borings were drilled to maximum depths of 15.25 to 30.42 feet below the existing ground surface. Relatively undisturbed and bulk samples were obtained at a maximum depth interval of 5 feet, and returned to our geotechnical laboratory in sealed containers for further testing and evaluation.

A detailed description of the subsurface field exploration program and the boring logs is presented in Appendix B.

LABORATORY TESTING PROGRAM

Selected soil samples obtained during the field investigation were subjected to geotechnical laboratory testing to evaluate their physical and engineering properties. Laboratory testing included in-place moisture content and dry density, laboratory compaction characteristics, direct shear, expansion index, sieve analysis, sand equivalent, R-value, expansion index, Atterberg limits, and soluble sulfate content. A detailed description of the geotechnical laboratory testing program and the test results are presented in Appendix C.

GEOLOGIC CONDITIONS

Regional Geologic Setting

As shown on Enclosure A-1, within Appendix A, the site is located within the United States Geological Survey Romoland 7.5 minute quadrangle topographic map. This region lies along the north-central portion of the Perris block of the northern Peninsular Ranges geologic province of southern California. While the Perris block is considered to be a relatively stable structural block, it is bounded by active faults. These include the Elsinore fault zone on the west, the San Jacinto fault zone on the east, and the Cucamonga fault zone on the north. The Perris block is underlain by rocks of the Peninsular Ranges batholith, a very large mass of crystalline igneous rocks of Cretaceous age and with no known floor, and by prebatholithic metasedimentary and metavolcanic rocks of older ages.

The Perris block has a series of erosional surfaces, marked by low topographic relief and capped with unconsolidated alluvial sediments stripped from the surrounding highlands. This area was mapped by the California Division of Mines and Geology as being underlain by deposits of old alluvial fan deposits (Morton, 2003).

The interior of the Perris Plain is considered to be relatively stable with few known active faults. However, this plain is bounded by active faults. These include the Elsinore fault zone on the west, the San Jacinto fault zone on the northeast, the San Andreas fault zone on the north, and the Agua-Tibia fault zone on the south. As the subject site is located near the western margin of the Perris Plain, the Elsinore fault is the closest known active fault in relation to the site. At its closest approach, the Elsinore fault is located approximately 12.6 kilometers (7.8 miles) southwest from the site. A complete listing of the distances to known active faults in relation to the various planning areas is given in the Faulting section of this report.

The site is shown within the regional geologic setting as mapped by the U.S.G.S. on the enclosed Regional Geologic Map, Enclosure A-3, within Appendix A.

Site Geologic Conditions

Fill/Topsoil: Fill/topsoil materials were encountered within our exploratory borings located within the currently undeveloped portion of the site to depths of approximately 2 feet. Minor clean sand fill (arena sand) was encountered within one of our two borings placed within APN 330-180-029. The fill/topsoil materials are believed to be associated with current and past weed abatement (discing) practices at the site. As encountered, the fill/topsoil materials were comprised of lean clay with sand, silty sand with clay, and clayey sand which were predominantly red-brown, dry, and in a loose state. Locally, deeper fills are anticipated to be present and primarily associated with the existing development in APN 330-180-029. Expansion index testing indicates that these materials will have a low expansion potential when used as compacted fill.

Older Alluvium: Older alluvial materials were encountered underlying the fill materials described above and at the surface within 5 of our exploratory borings. The older alluvial soils encountered were a maximum of approximately 8 feet in thickness and rest upon bedrock materials. These units were noted to mainly consist of lean clay with sand with minor units of silty sand with clay and clayey sand. The older alluvial materials were in a relatively medium dense to very stiff/very dense state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing. Expansion index testing indicates that these materials will have a low expansion potential when used as compacted fill.

Bedrock: Bedrock materials were encountered within all of our exploratory borings at depths of approximately 2 to 8 feet. Igneous bedrock was encountered within our exploratory borings placed within the eastern approximate two-thirds of the site (boring B-1 through B-7 and B-10). Metamorphic bedrock was encountered within our exploratory borings placed within the western approximate one-third of the site (borings B-8, B–9, B-11, and B-12).

The igneous bedrock was gabro in composition which was typically coarse grained, severely to moderately weathered upon first encounter becoming less weathered with depth, dry to damp, and in a hard to very hard state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing. Refusal was experienced within one boring (B-8) at approximately 18 feet.

The metamporphic bedrock was phyllite in composition which was typically fine grained, severely to highly weathered upon first encounter becoming less weathered with depth, damp, and in a hard to very hard state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing. Refusal was experienced within one boring (B-12) at approximately 16 feet.

A detailed description of the subsurface soil conditions as encountered within our exploratory borings, is presented on the Boring Logs within Appendix B. Excluding the surficial layer of fill/topsoil, the natural earth materials encountered during this investigation are shown on Enclosure A-2.

Groundwater Hydrology

Groundwater was not encountered within any of our exploratory borings as advanced to a maximum depth of approximately 30.42 feet below the existing ground surface nor was any groundwater seepage observed during our site reconnaissance.

In order to estimate the approximate depth to groundwater in the site area, a search was conducted for local groundwater (well) level measurements within the Cooperative Well Measuring Program, Spring 2021 (Watermaster Support Services et al., 2021). This database contains depth to groundwater measurements dating back to 1993. We also conducted a search of the water well database information provided in the California Department of Water Resources (CDWR) Water Library Data website (CDWR, 2021).

The only database with nearby well records was the CDWR database. One well, State Well No. 05S03W17A001S, located approximately 1 kilometer (0.62 miles) to the northeast was identified. Data for this well was limited to one reading in 1995. A measuring point elevation of 1,424± feet above mean sea level was reported. The depth provided was 22 feet (elevation of 1,402± feet above mean sea level).

As noted on Enclosure A-2, the lowest elevation of the site is 1,456 feet above mean sea level. Based on the information above, groundwater in the region appears to be at depths on the order of 50 feet below the ground surface. Groundwater may seep into the bedrock beneath the site region along fractures and joints within the bedrock, the presence of hard bedrock beneath the site generally precludes the development of groundwater conditions or a groundwater table in these areas. Any groundwater that might be encountered during site development would likely be the result of infiltration of surface waters/irrigation waters traveling downward into the bedrock along these joints and fractures.

Mass Movement

The site lies on a relatively flat surface. The occurrence of mass movement failures such as landslides, rockfalls, or debris flows within such areas is generally not considered common, and no evidence of mass movement was observed on the site.

Faulting

No active or potentially active faults are known to exist at the subject site. In addition, the subject site does not lie within a current State of California Earthquake Fault Zone (Hart and Bryant, 2003) nor does the site lie within a County of Riverside fault zone (CRTLMA, 2021). No evidence of faulting projecting into or crossing the site was noted during our aerial photograph review or our review of published geologic maps.

As previously mentioned, the closest known active earthquake fault with a documented location is the Elsinore fault located approximately 12.6 kilometers (7.8 miles) to the southwest. In addition, other relatively close active faults include the San Jacinto fault located approximately 18.4 kilometers (11.4 miles) to the northeast, and the San Andreas fault located approximately 42.3 kilometers (26.3 miles) to the northeast.

The Elsinore fault zone is one of the largest in southern California. At its northern end it splays into two segments and at its southern end it is cut by the Yuba Wells fault. The primary sense of slip along the Elsinore fault is right lateral strike-slip. It is believed that the Elsinore fault zone is capable of producing an earthquake magnitude on the order of 6.5 to 7.5.

The San Jacinto fault zone is a sub-parallel branch of the San Andreas fault zone, extending from the northwestern San Bernardino area, southward into the El Centro region. This fault has been active in recent times with several large magnitude events. It is believed that the San Jacinto fault is capable of producing an earthquake magnitude on the order of 6.5 or larger.

The San Andreas fault is considered to be the major tectonic feature of California, separating the Pacific Plate and the North American Plate. While estimates vary, the San Andreas fault is generally thought to have an average slip rate on the order of 24mm/yr and capable of generating large magnitude events on the order of 7.5.

Current standards of practice included a discussion of all potential earthquake sources within a 100 kilometer (62 mile) radius. However, while there are other large earthquake faults within a 100 kilometer (62-mile) radius of the site, none of these are considered as relevant to the site as the faults described above, due to their closer distance and larger anticipated magnitudes.

Historical Seismicity

In order to obtain a general perspective of the historical seismicity of the site and surrounding region a search was conducted for seismic events at and around the area within various radii. This search was conducted utilizing the historical seismic search website of the U.S.G.S. (2021). This website conducts a search of a user selected cataloged seismic events database, within a specified radius and selected magnitudes, and then plots the events onto a map. At the time of our search, the database contained data from January 1, 1932 through December 15, 2021.

In our first search, the general seismicity of the region was analyzed by selecting an epicenter map listing all events of magnitude 4.0 and greater, recorded since 1932, within a 100 kilometer (62 mile) radius of the site, in accordance with guidelines of the California Division of Mines and Geology. This map illustrates the regional seismic history of moderate to large events. As depicted on Enclosure A-4, within Appendix A, the site lies within a relatively active region associated with the San Jacinto fault to the northeast.

In the second search, the micro seismicity of the area lying within a 15 kilometer (9.3 miles) radius of the site was examined by selecting an epicenter map listing events on the order of 1.0 and greater since 1978. In addition, only the “A” events, or most accurate events were selected. Caltech indicates the accuracy of the “A” events to be approximately 1 kilometer. The result of this search is a map that presents the seismic history around the area of the site with much greater detail, not permitted on the larger map. The reason for limiting the time period for the events on the detail map is to enhance the accuracy of the map. Events recorded prior to the mid to late1970's are generally considered to be less accurate due to advancements in technology. As depicted on this map, Enclosure A-5, the Elsinore fault zone to the southwest and the San Jacinto fault zone to the northeast appears to be the source of numerous events.

In summary, the historical seismicity of the site entails numerous small to medium magnitude earthquake events occurring in the region around the subject site. Any future developments at the subject site should anticipate that moderate to large seismic events could occur very near the site.

Secondary Seismic Hazards

Other secondary seismic hazards generally associated with severe ground shaking during an earthquake include liquefaction, seismic-induced settlement, seiches and tsunamis, earthquake induced flooding, landsliding, and rockfalls.

Liquefaction: The site lies within an area mapped by the County of Riverside has having a very low potential for liquefaction (CRTLMA, 2021). The potential for liquefaction generally occurs during strong ground shaking within granular loose sediments where the groundwater is usually less than 50 feet below the ground surface. As found during this investigation, the site is underlain by relatively shallow igneous and metamorphic bedrock in the upper 50 feet, therefore, the possibility of liquefaction at the site is considered nil.

Seiches/Tsunamis: The potential for the site to be affected by a seiche or tsunami (earthquake generated wave) is considered nil due to absence of any large bodies of water near the site.

Flooding (Water Storage Facility Failure): There are no large water storage facilities located on or near the site which could possibly rupture during in earthquake and affect the site by flooding.

Seismically-Induced Landsliding: Due to the low relief of the site and surrounding region, the potential for landslides to occur at the site is considered nil.

Rockfalls: No large, exposed, loose or unrooted boulders are present above the site that could affect the integrity of the site.

Seismically-Induced Settlement: Settlement generally occurs within areas of loose, granular soils with relatively low density. Since the site is underlain by relatively dense older alluvial materials and hard igneous and metamorphic bedrock, the potential for settlement is considered very low. In addition, the recommended earthwork operations to be conducted during the development of the site should mitigate any near surface loose soil conditions.

SOILS AND SEISMIC DESIGN CRITERIA (California Building Code 2019)

Design requirements for structures can be found within Chapter 16 of the 2019 California Building Code (CBC) based on building type, use, and/or occupancy. The classification of use and occupancy of all proposed structures at the site, shall be the responsibility of the building official.

Site Classification

Chapter 20 of the ASCE 7-16 defines six possible site classes for earth materials that underlie any given site. Bedrock is assigned one of three of these six site classes and these are: A, B, or C. Soil is assigned as C, D, E, or F. Per ASCE 7-16, Site Class A and Site Class B shall be measured on-site or estimated by a geotechnical engineer, engineering geologist or seismologist for competent rock with moderate fracturing and weathering. Site Class A and Site Class B shall not be used if more than 10 feet of soil is between the rock surface and bottom of the spread footing or mat foundation. Site Class C can be used for very dense soil and soft rock with Ñ values greater than 50 blows per foot. Site Class D can be used for stiff soil with Ñ values ranging from 15 to 50 blows per foot. Site Class E is for soft clay soils with Ñ values less than 15 blows per foot. Our previous investigation, mapping by others, and our experience in the site region indicates that the materials beneath the site are considered Site Class C very dense soil and soft rock.

CBC Earthquake Design Summary

Earthquake design criteria have been formulated in accordance with the 2019 CBC and ASCE 7-16 for the site based on the results of our investigation to determine the Site Class and an assumed Risk Category II. However, these values should be reviewed and the final design should be performed by a qualified structural engineer familiar with the region. In addition, the building official should confirm the Risk Category utilized in our design (Risk Category II). Our design values are provided below:

CBC 2019 SEISMIC DESIGN SUMMARY* Site Location (USGS WGS84) 33.73758, -117.22143, Risk Category II	
Site Class Definition Chapter 20 ASCE 7-16	C
$\mathbf{S_s}$ Mapped Spectral Response Acceleration at 0.2s Period	1.433
$\mathbf{S_1}$ Mapped Spectral Response Acceleration at 1s Period	0.527
$\mathbf{S_{MS}}$ Adjusted Spectral Response Acceleration at 0.2s Period	1.719
$\mathbf{S_{M1}}$Adjusted Spectral Response Acceleration at 1s Period	0.776
$\mathbf{S_{DS}}$ Design Spectral Response Acceleration at 0.2s Period	1.146
$\mathbf{S_{D1}}$ Design Spectral Response Acceleration at 1s Period	0.518
$\mathbf{F_a}$ Short Period Site Coefficient at 0.2s Period	1.2
$\mathbf{F_v}$ Long Period Site Coefficient at 1s Period	1.473
PGA_M	0.608
Seismic Design Category	D
*Values obtained from OSHPD Seismic Design Maps tool	

PERCOLATION TESTING AND TEST RESULTS

Four borehole percolation tests were conducted in general accordance with the Shallow Percolation Test procedure as outlined in the Design Handbook for Low Impact Development Best Management Practices (CRFCWCD, 2011). The requested locations of our test are illustrated on Enclosure A-2. Test borings were drilled to depths of approximately 7, 8, 9, and 10 feet, as requested, below the existing ground surface on December 6, 2021. Subsequent to drilling, a 3-inch diameter, perforated PVC pipe wrapped in filter fabric was placed within each test hole and 3/4-inch gravel was placed between the outside of the pipe and the hole wall. Test holes were pre-soaked the same day as drilling. Testing took place the next day, December 7, 2021, within 26 hours but not before 15 hours, of the pre-soak. The holes were filled with a variable height column of water using water from a 200 gallon water tank. Test periods consisted of allowing the water to drop in 30-minute intervals. After each reading, the hole was refilled. Testing was terminated after a total of 12 readings were recorded.

Infiltration test results are summarized in the following table:

Test No.	Depth*	Infiltration Rate** (in/hr)
P-1	10	1.24
P-2	9	0.27
P-3	8	0.54
P-4	7	0.08

* depth measured below existing ground surface
** Porchet Method determined rate with an effective diameter due to loss in volume of water due to gravel packing.

The results of this testing are presented as Enclosures D-1 through D-4 in Appendix D. The test results indicate variable infiltration characteristics for the materials tested.

CONCLUSIONS

This investigation provides a broad overview of the geotechnical and geologic factors which are expected to influence future site planning and development. On the basis of our field investigation and testing program, it is the opinion of LOR Geotechnical Group, Inc., that the proposed development of the site for the proposed use is feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into design and implemented during grading and construction.

It should be noted that the subsurface conditions encountered in our exploratory borings are indicative of the locations explored and the subsurface conditions may vary. If conditions are encountered during the construction of the project that differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided.

Rippability of Bedrock Units

The rippability of the bedrock units at the subject site was estimated based on the relative ease, or lack of, excavation during our boring exploration. The bedrock units which underlie the site are anticipated to be rippable by conventional earthmoving equipment down to the depths explored. Excavations deeper than this may require specialized methods, such as

D8R or larger dozer using a multi or single shank ripper. It is also anticipated that some larger non-rippable rock "floaters" may be encountered. These may require special handling. Excavations in these materials may require specialized methods.

If a more precise estimation of the rippability of the bedrock units is required, a seismic refraction investigation should be conducted at the site. Such a study should involve the measuring of the seismic velocities of the underlying bedrock units, as they increase with depth, then comparing these to estimates of velocities verses ease of excavation charts.

In summary, the most important consideration for the proposed grading should include selecting an experienced, well-qualified contractor. The success to excavating the bedrock materials at the site will require the contractor to have knowledge of the appropriate ripper-equipment selection (i.e., down pressure available at the tip, tractor flywheel horsepower, tractor gross weight, etc.), ripping techniques (i.e., single- or multi-shank teeth, pass spacing, tandem pushing, etc.). It should also be noted that while in some areas where deeper cuts may be possible with standardized earthmoving equipment, specialized methods may increase the speed of the excavations at the site.

Foundation Support

To provide adequate support for the proposed structures, we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. The construction of this compacted fill mat will allow for the removal of the existing fill material which was loose and any current subsurface improvements, such as utilities, foundations, etc., that may be present locally.

Conventional foundation systems utilizing either individual spread footings and/or continuous wall footings will provide adequate support for the anticipated downward and lateral loads when utilized in conjunction with the recommended fill mat.

Soil Expansiveness

Our expansion index testing of a representative sample of the on-site soils indicates a low expansion potential. For low expansive soils, specialized foundation design and construction procedures to resist expansive soil activity are necessary and provided in the following sections of this report.

Careful evaluation of onsite soils and any import fill for their expansion potential should be conducted during the grading operation.

Sulfate Protection

The results of the soluble sulfate tests conducted on selected subgrade soils expected to be encountered at foundation levels indicate that there is a negligible sulfate exposure to concrete elements in contact with the on site soils per the 2019 CBC. Therefore, no specific recommendations are given for concrete elements to be in contact with the onsite soils.

Infiltration

The results of our field investigation and percolation test data indicates the site soils at the depths tested are not conducive to infiltration. Based on the results of this investigation, infiltration is also not anticipated to occur at other depths due to the amount of silty/clayey fines and dense to very dense nature of the soils and hard to very hard nature of the bedrock.

Geologic Mitigations

No special mitigation methods are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

Seismicity

Seismic ground rupture is generally considered most likely to occur along pre-existing active faults. Since no known faults are known to exist at, or project into the site, the probability of ground surface rupture occurring at the site is considered nil.

Due to the site's close proximity to the faults described above, it is reasonable to expect a relatively strong ground motion seismic event to occur during the lifetime of the proposed development on the site. Large earthquakes could occur on other faults in the general area, but because of their lesser anticipated magnitude and/or greater distance, they are considered less significant than the faults described above from a ground motion standpoint.

The effects of ground shaking anticipated at the subject site should be mitigated by the seismic design requirements and procedures outlined in Chapter 16 of the California Building Code. However, it should be noted that the current building code requires the minimum design to allow a structure to remain standing after a seismic event, in order to allow for safe evacuation. A structure built to code may still sustain damage which might ultimately result in the demolishing of the structure (Larson and Slosson, 1992).

No secondary seismic hazards are anticipated to impact the proposed development.

RECOMMENDATIONS

Geologic Recommendations

No special geologic recommendations are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

General Site Grading

It is imperative that no clearing and/or grading operations be performed without the presence of a qualified geotechnical engineer. An onsite, pre-job meeting with the developer, the contractor, the jurisdictional agency, and the geotechnical engineer should occur prior to all grading related operations.

Operations undertaken at the site without the geotechnical engineer present may result in exclusions of affected areas from the final compaction report for the project.

Grading of the subject site should be performed in accordance with the following recommendations as well as applicable portions of the California Building Code, and/or applicable local ordinances.

All areas to be graded should be stripped of significant vegetation and other deleterious materials.

Any undocumented fill encountered during grading should be completely removed, cleaned of significant deleterious materials, and may be reused as compacted fill. It is our recommendation that any existing fills under any proposed flatwork and paved areas be removed and replaced with engineered compacted fill. If this is not done, premature structural distress (settlement) of the flatwork and pavement may occur.

Cavities created by removal of subsurface obstructions should be thoroughly cleaned of loose soil, organic matter and other deleterious materials, shaped to provide access for construction equipment, and backfilled as recommended in the following Engineered Compacted Fill section of this report.

Initial Site Preparation

The existing fill/topsoil material, as well as any loose older alluvial soils and any loose bedrock, if encountered, should be removed from all proposed structural and/or fill areas. The data developed during this investigation indicates that removals on the order of 2 to 3 feet deep will be required from proposed development areas in order to encounter competent older alluvium or competent bedrock upon which engineered compacted fill can be placed. The given removal depths are preliminary. Deeper fills may be present, primarily in areas of past and current improvements. Removals should expose older alluvial materials with an in-situ relative compaction of at least 85 percent (ASTM D 1557) or relatively unweathered, hard, bedrock. The actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Preparation of Fill Areas

Prior to placing fill, the surfaces of all areas to receive fill should be scarified to a minimum depth of 6 inches. The scarified materials should be brought to near optimum moisture content and recompacted to a relative compaction of at least 90 percent (ASTM D 1557).

Engineered Compacted Fill

The onsite soils should provide adequate quality fill material, provided they are free from oversized and/or organic matter and other deleterious materials. Unless approved by the geotechnical engineer, rock or similar irreducible material with a maximum dimension greater than 6 inches should not be buried or placed in fills.

If required, import fill should be inorganic, non-expansive granular soils free from rocks or lumps greater than 6 inches in maximum dimension. Sources for import fill should be approved by the geotechnical engineer prior to their use. Fill should be spread in maximum 8-inch uniform, loose lifts, each lift brought to near optimum moisture content, and compacted to a relative compaction of at least 90 percent in accordance with ASTM D 1557.

Preparation of Foundation Areas

All footings should rest upon at least 24 inches of properly compacted fill material placed over competent older alluvium or bedrock. In areas where the required fill thickness is not accomplished by the recommended removals or by site rough grading, the footing areas should be further subexcavated to a depth of at least 24 inches below the proposed footing base grade, with the subexcavation extending at least 5 feet beyond the footing lines. The bottom of all excavations should be scarified to a depth of 12 inches, brought to near optimum moisture content, and recompacted to at least 90 percent relative compaction (ASTM D 1557) prior to the placement of compacted fill.

Concrete floor slabs should bear on a minimum of 24 inches of compacted soil. This should be accomplished by the recommendations provided above. The final pad surfaces should be rolled to provide smooth, dense surfaces upon which to place the concrete.

Short-Term Excavations

Following the California Occupational and Safety Health Act (CAL-OSHA) requirements, excavations 5 feet deep and greater should be sloped or shored. All excavations and shoring should conform to CAL-OSHA requirements. Short-term excavations of 5 feet deep and greater shall conform to Title 8 of the California Code of Regulations, Construction Safety Orders, Section 1504 and 1539 through 1547. Based upon the findings from our exploratory borings, it appears that Type C soils are the predominant type of soil on the project and all short-term excavations should be based on this type of soil.

Deviation from the standard short-term slopes are permitted using option 4, Design by a Registered Professional Engineer (Section 1541.1).

Short-term excavation construction and maintenance are the responsibility of the contractor and should be a consideration of his methods of operation and the actual soil conditions encountered.

Slope Construction

Preliminary data indicates that cut and fill slopes should be constructed no steeper than two horizontal to one vertical. Fill slopes should be overfilled during construction and then cut back to expose fully compacted soil. A suitable alternative would be to compact the

slopes during construction, then roll the final slopes to provide dense, erosion-resistant surfaces.

Slope Protection

Since the site soil materials are susceptible to erosion by running water, measures should be provided to prevent surface water from flowing over slope faces. Slopes at the project should be planted with a deep rooted ground cover as soon as possible after completion. The use of succulent ground covers such as iceplant or sedum is not recommended. If watering is necessary to sustain plant growth on slopes, then the watering operation should be monitored to assure proper operation of the irrigation system and to prevent over watering.

Soil Expansiveness

The upper materials encountered during this investigation were tested and found to have a low expansion potential. Therefore, specialized foundation design and construction procedures to specifically resist expansive soil activity are anticipated at this time and are provided within.

Additional evaluation of on-site and any imported soils for their expansion potential should be conducted following completion of the grading operation.

Foundation Design

Due to low expansive soil conditions, we recommend that all structures be supported on reinforced, stiffened mat foundations resting over 24 inches of engineered compacted fill placed over competent native earth materials.

The design of the structural slab foundation should be performed in conformance to the Wire Reinforcement Institute (WRI) method or the Post-Tensioning Institute (PTI) method. For the application of the WRI method, a minimum effective plasticity index of 27 is recommended for foundation design. The slab thickness should be a minimum of 5 inches and should have a reinforcement of at least Asfy equal to 3,300 pounds. This could consist of #3 reinforcing bars of 60-grade steel placed at a maximum spacing of 18 inches on center, each way or equivalent. Prior to placing concrete slabs, the upper 12 inches of the subgrade soil should be pre-saturated to 2 to 4 percent over optimum moisture content.

These reinforcement, depth, and spacing recommendations should be considered minimum. The actual requirements for slab-on-grade foundations design and construction should be provided by a structural engineer experienced in these matters.

These conditions should be verified during the site grading by additional evaluation of on-site and any imported soils for their expansion potential and plasticity characteristics.

If slab-on-grade foundations per the PTI method are proposed, the following geotechnical parameters should be used for design:

- Edge Moisture Variation Distance, em:
  - Center Lift Loading Conditions: 9.0 ft
  - Edge Lift Loading Conditions: 7.8 ft
- Differential Swell, ym:
  - Center Lift 4.0 in
  - Edge Lift 8.0 in

- Subgrade Soil Friction Coefficient, μ: 0.30

The above design parameters are based upon the data collected during our site investigation and are in accordance with Design of Post-Tensioned Slabs-on-Ground, third edition, published by the Post-Tensioning Institute (2008).

For the minimum width and depth, spread foundations may be designed using an allowable bearing pressure of 2,000 pounds per square foot (psf). This bearing pressure may be increased by 200 psf for each additional foot of width, and by 500 psf for each additional foot of depth, up to a maximum of 4,000 psf.

The above values are net pressures; therefore, the weight of the foundations and the backfill over the foundations may be neglected when computing dead loads. The values apply to the maximum edge pressure for foundations subjected to eccentric loads or overturning. The recommended pressures apply for the total of dead plus frequently applied live loads, and incorporate a factor of safety of at least 3.0. The allowable bearing pressures may be increased by one-third for temporary wind or seismic loading. The resultant of the combined vertical and lateral seismic loads should act within the middle one-third of the footing width. The maximum calculated edge pressure under the toe of foundations subjected to eccentric loads or over turning should not exceed the increased

allowable pressure. Buildings should be setback from slopes in accordance with the California Building Code.

Resistance to lateral loads will be provided by passive earth pressure and base friction. For footings bearing against compacted fill, passive earth pressure may be considered to be developed at a rate of 230 pounds per square foot per foot of depth. Base friction may be computed at 0.23 times the normal load. Base friction and passive earth pressure may be combined without reduction. These values are for dead load plus live load and may be increased by one-third for wind or seismic loading.

Settlement

Total settlement of individual foundations will vary depending on the width of the foundation and the actual load supported. Maximum settlement of shallow foundations designed and constructed in accordance with the preceding recommendations are estimated to be on the order of 0.5 inch. Differential settlements between adjacent footings should be about one-half of the total settlement. Settlement of all foundations is expected to occur rapidly, primarily as a result of elastic compression of supporting soils as the loads are applied, and should be essentially completed shortly after initial application of the loads.

Building Area Slab-on-Grade

To provide adequate support, concrete floor slabs-on-grade should bear on a minimum of 24 inches of engineered fill compacted soil placed and maintained at 2 to 4 percent above optimum moisture content. The final pad surfaces should be rolled to provide smooth, dense surfaces. Concrete slabs-on-grade should be a minimum of 5 inches in thickness with No. 3 bars spaced 12 inches on center each way.

The actual requirements for slab-on-grade design and construction details should be provided by a structural engineer experienced in these matters. These conditions should be verified during the site grading by additional evaluation of on-site and any imported soils for their expansion potential and plasticity characteristics.

Slabs to receive moisture-sensitive coverings should be provided with a moisture vapor retarder/barrier. We recommend that a vapor retarder/barrier be designed and constructed according to the American Concrete Institute 302.1R, Concrete Floor and Slab Construction, which addresses moisture vapor retarder/barrier construction. At a minimum, the vapor retarder/barrier should comply with ASTM E1745 and have a nominal thickness

of at least 10 mils. The vapor retarder/barrier should be properly sealed, per the manufacturer's recommendations, and protected from punctures and other damage. Per the Portland Cement Association, for slabs with vapor-sensitive coverings, a layer of dry, granular material (sand) should be placed under the vapor retarder/barrier.

For slabs in humidity-controlled areas, a layer of dry, granular material (sand) should be placed above the vapor retarder/barrier.

The slabs should be protected from rapid and excessive moisture loss which could result in slab curling. Careful attention should be given to slab curing procedures, as the site area is subject to large temperature extremes, humidity, and strong winds.

Exterior Flatwork

To provide adequate support, exterior flatwork improvements should rest on a minimum of 12 inches of soil compacted to at least 90 percent (ASTM D 1557).

To resist expansive soil forces, flatwork supported by low expansive soils should be reinforced with a minimum of # 3 rebar at 18 inches each way. Flatwork areas should be pre-saturated to 2 to 4 percent over optimum moisture content to a minimum depth of 12 inches prior to placing concrete.

Flatwork surface should be sloped a minimum of 1 percent away from buildings and slopes, to approved drainage structures.

Wall Pressures

The design of footings for retaining walls should be performed in accordance with the recommendations described earlier under Preparation of Foundation Areas and Foundation Design. For design of retaining wall footings, the resultant of the applied loads should act in the middle one-third of the footing, and the maximum edge pressure should not exceed the basic allowable value without increase.

For design of retaining walls unrestrained against movement at the top, we recommend an active pressure of 56 pounds per square foot (psf) per foot of depth be used.

This assumes level backfill consisting of compacted, non-expansive, soils placed against the structures and within the back cut slope extending upward from the base of the stem at 35 degrees from the vertical or flatter. Non-expansive import soils may be required. Retaining structures subject to uniform surcharge loads within a horizontal distance behind the structures equal to the structural height should be designed to resist additional lateral loads equal to 0.53 times the surcharge load. Any isolated or line loads from adjacent foundations or vehicular loading will impose additional wall loads and should be considered individually.

To avoid over stressing or excessive tilting during placement of backfill behind walls, heavy compaction equipment should not be allowed within the zone delineated by a 45 degree line extending from the base of the wall to the fill surface. The backfill directly behind the walls should be compacted using light equipment such as hand operated vibrating plates and rollers. No material larger than three inches in diameter should be placed in direct contact with the wall.

Wall pressures should be verified prior to construction, when the actual backfill materials and conditions have been determined. Recommended pressures are applicable only to level, non-expansive, properly drained backfill with no additional surcharge loadings. If inclined backfills are proposed, this firm should be contacted to develop appropriate active earth pressure parameters.

Preliminary Pavement Design

Testing and design for preliminary onsite pavement was conducted in accordance with the California Highway Design Manual. Based upon our preliminary sampling and testing, and upon an assumed Traffic Index generally used for similar projects, it appears that the structural sections tabulated below should provide satisfactory pavements for the subject on-site pavement improvements:

AREA	T.I.	DESIGN R-VALUE	PRELIMINARY SECTION
On site vehicular parking with occasional truck traffic (ADTT=10)	6.0	10	0.25' AC / 1.05' AB or 5" JPCP / 6" AB
Light to moderate truck traffic (ADTT=25)	7.0	10	0.30'AC / 1.25'AB or 6" JPCP / 6" AB
AC - Asphalt Concrete AB - Class 2 Aggregate Base JPCP - Jointed Plain Concrete Pavement with MR ≥ 600 psi			

The above structural sections are predicated upon 90 percent relative compaction (ASTM D 1557) of all utility trench backfills and 95 percent relative compaction (ASTM D 1557) of the upper 12 inches of pavement subgrade soils and of any aggregate base utilized. In addition, the aggregate base should meet Caltrans specifications for Class 2 Aggregate Base.

In areas of the pavement which will receive high abrasion loads due to start-ups and stops, or where trucks will move on a tight turning radius, consideration should be given to installing concrete pads. Such pads should be a minimum of 5 inch thick concrete, with a 6 inch thick aggregate base. Concrete pads are also recommended in areas adjacent to trash storage areas where heavier loads will occur due to operation of trucks lifting trash dumpsters.

The recommended concrete pavement sections should have a minimum modulus of rupture (MR) of 600 pounds per square inch (psi). Transverse joints should be sawcut in the pavement at approximately 12 to 15-foot intervals within 4 to 6 hours of concrete placement, or preferably sooner. Sawcut depth should be equal to approximately one quarter of slab thickness. Construction joints should be constructed such that adjacent sections butt directly against each other and are keyed into each other. Parallel pavement sections should also be keyed into each other.

It should be noted that all of the above pavement design was based upon the results of preliminary sampling and testing, and should be verified by additional sampling and testing during construction when the actual subgrade soils are exposed.

Infiltration

The results of our field investigation and percolation test data indicates the site earth materials at the depths and locations tested are not conducive to infiltration. Therefore, water quality storm water systems should not incorporate on-site infiltration when determining storm water treatment capacity.

Construction Monitoring

Post investigative services are an important and necessary continuation of this investigation. Project plans and specifications should be reviewed by the project geotechnical consultant prior to construction to confirm that the intent of the recommendations presented in this report have been incorporated into the design.

Additional R-value, expansion, and soluble sulfate content testing may be needed after/during site rough grading.

During construction, sufficient and timely geotechnical observation and testing should be provided to correlate the findings of this investigation with the actual subsurface conditions exposed during construction. Items requiring observation and testing include, but are not necessarily limited to, the following:

1. Site preparation-stripping and removals.

2. Excavations, including approval of the bottom of excavations prior to the processing and preparation of the bottom areas for fill placement.

3. Scarifying and recompacting prior to fill placement.

4. Placement of engineered compacted fill and backfill, including approval of fill materials and the performance of sufficient density tests to evaluate the degree of compaction being achieved

5. Foundation excavations.

6. Subgrade preparation for pavements and slabs-on-grade. This includes pre-saturation testing of slab-on-grade and flatwork areas to verify moisture content.

LIMITATIONS

This report contains geotechnical conclusions and recommendations developed solely for use by Compass Danbe Real Estate Partners, LLC and their design consultants for the purposes described earlier. It may not contain sufficient information for other uses or the purposes of other parties. The contents should not be extrapolated to other areas or used for other facilities without consulting LOR Geotechnical Group, Inc.

The recommendations are based on interpretations of the subsurface conditions concluded from information gained from subsurface explorations and a surficial site reconnaissance. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. If conditions are encountered during the construction of the project, which differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided. Due to possible subsurface variations, all aspects of field construction addressed in this report should be observed and tested by the project geotechnical consultant.

If parties other than LOR Geotechnical Group, Inc., provide construction monitoring services, they must be notified that they will be required to assume responsibility for the geotechnical phase of the project being completed by concurring with the recommendations provided in this report or by providing alternative recommendations.

The report was prepared using generally accepted geotechnical engineering practices under the direction of a state licensed geotechnical engineer. No warranty, expressed or implied, is made as to conclusions and professional advice included in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations as deemed necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Governmental Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a significant amount of time without a review by LOR Geotechnical Group, Inc., verifying the suitability of the conclusions and recommendations.

CLOSURE

It has been a pleasure to assist you with this project. We look forward to being of further assistance to you as construction begins. Should conditions be encountered during construction that appear to be different than indicated by this report, please contact this office immediately in order that we might evaluate their effect.

Should you have any questions regarding this report, please do not hesitate to contact our office at your convenience.

Respectfully submitted,
LOR Geotechnical Group, Inc.

Andrew A. Tardie
Staff Geologist

Robert M. Markoff, CEG
Engineering Geologist

John P. Leuer, GE 2030
President

AAT:RMM:JPL:ss





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REFERENCES

American Society of Civil Engineers, 2016, Minimum Design Load for Buildings and Other Structures, ASCE 7-16.

California Building Standards Commission and International Conference of Building Officials, 2019, California Building Code, 2019 Edition.

California Department of Water Resources, 2021, Online Water Data Library (WDL), https://wdl.water.ca.gov/waterdatalibrary/Map.aspx, accessed August 2021.

County of Riverside, Flood Control and Water Conservation District (CRFCWCD), 2011, Design Handbook for Low Impact Development Best Management Practices, dated September 2011.

County of Riverside, Transportation and Land Management Agency (CRTLMA), 2021, Geographic Information System, http://www3.tlma.co.riverside.ca.us, accessed August 2021.

Google Earth, 2021, Imagery from various years, www.google.com/earth.

Hart, E.W. and W.A. Bryant, 2010, Fault-Rupture Hazard Zones in California, California Dept. of Conservation Division of Mines and Geology Special Publication 42.

Historic Aerials (Nationwide Environmental Title Research, LLC), 2021, Imagery from Various Years, https://www.historicaerials.com/, accessed August 2021.

Larson, R., and Slosson, J., 1992, The Role of Seismic Hazard Evaluation in Engineering Reports, in Engineering Geology Practice in Southern California, AEG Special Publication Number 4, pp 191-194.

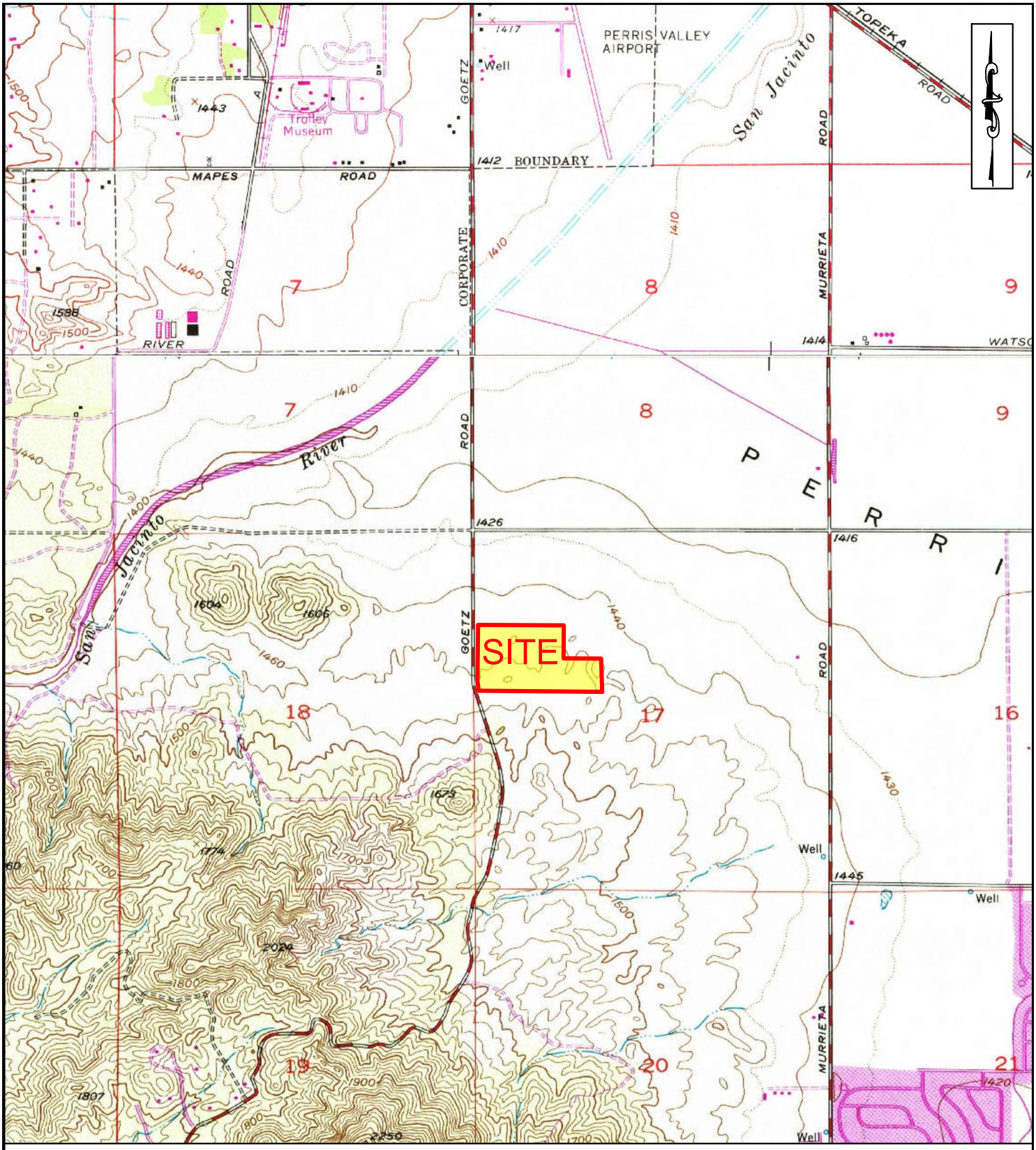
Morton, D.M., 2003, Preliminary Geologic Map of the Romoland 7.5' Quadrangle, Riverside County, California, U.S.G.S. Open File Report 03-102.

USGS, 2021, https://earthquake.usgs.gov/earthquakes/map/.

Watermaster Support Services, Western Municipal Water District, and San Bernardino Valley Water Conservation District, 2021, Cooperative Well Measuring Program, Spring 2021, Covering the Upper Santa Ana River Watershed, San Jacinto Watershed, and Santa Margarita Watershed, July 1, 2021.

APPENDIX A

Index Map, Site Plan, Regional Geologic Map, and Historical Seismicity Maps



INDEX MAP

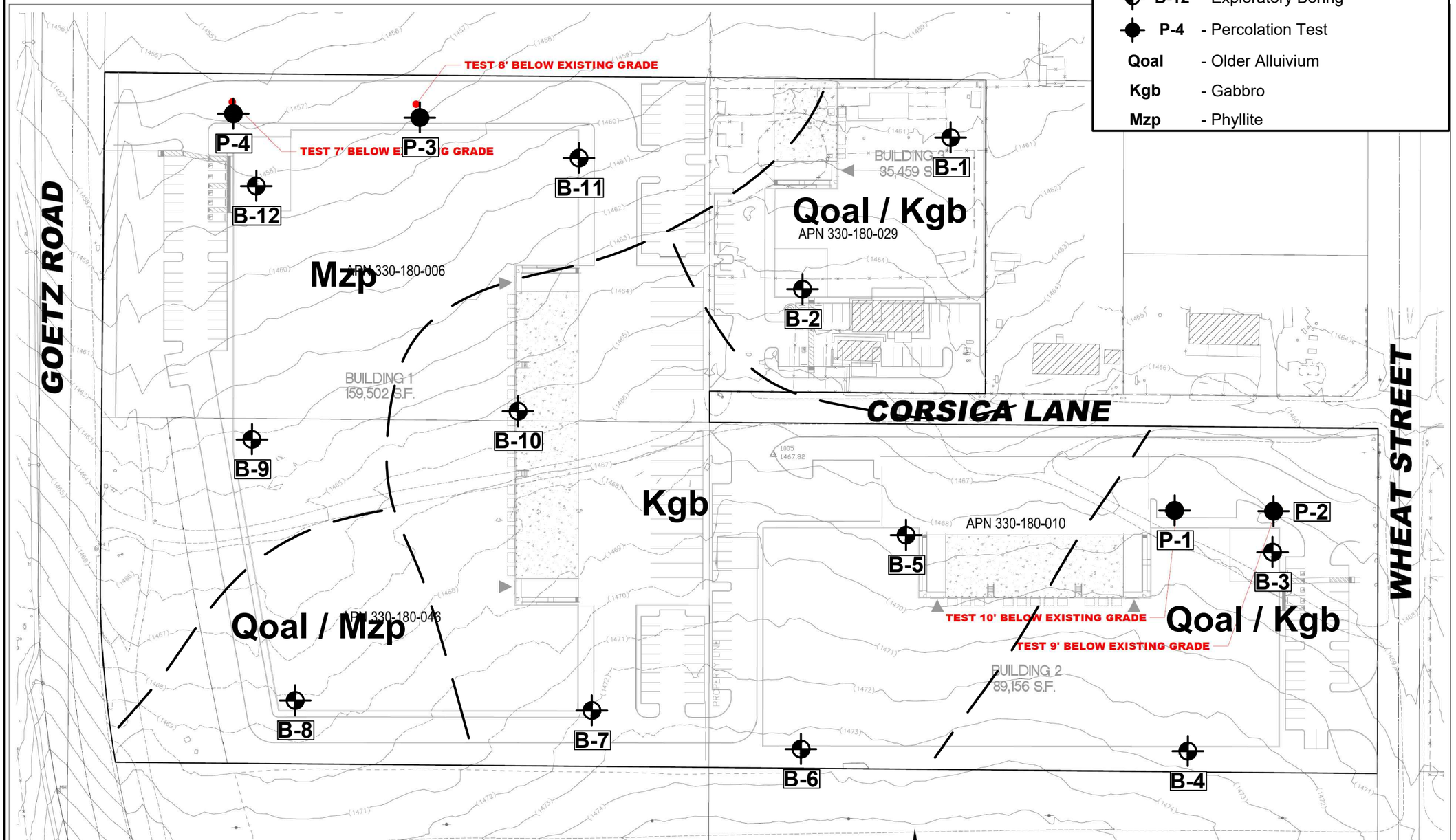
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CLIENT:	Compass Danbe Real Estate Partners, LLC.	**ENCLOSURE:**	A-1
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	December 2021
		SCALE:	1" ≈ 2,000'

Legend

(Locations Approximate)

Map Symbols

- **B-12** - Exploratory Boring
- **P-4** - Percolation Test
- **Qoal** - Older Alluvium
- **Kgb** - Gabbro
- **Mzp** - Phyllite



12/03/2021

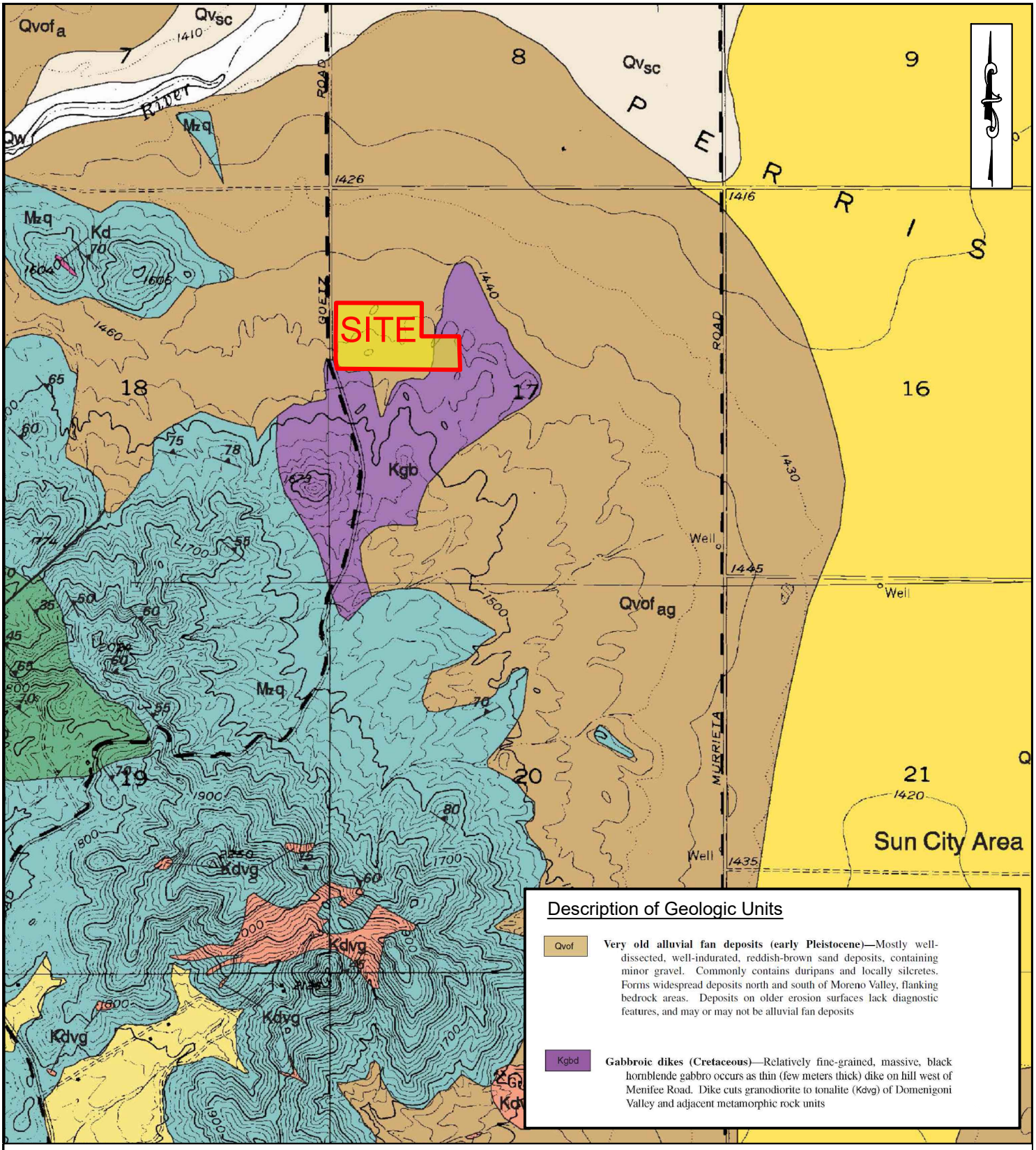
INFILTRATION LOCATION EXHIBIT
APN 330-180-006, 010, 029, 049
GOETZ ROAD / CORSICA LN.
CITY OF MENIFEE

CASC
Engineering and Consulting
14710 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.del-cosc.com

SITE PLAN

PROJECT NO.:	23758.1
PROJECT:	APNs 330-180-006, –010, –029, and –046, Menifee, California
ENCLOSURE:	A-2
CLIENT:	Compass Danbe Real Estate Partners, LLC.
DATE:	December 2021
SCALE:	1" ≈ 100'

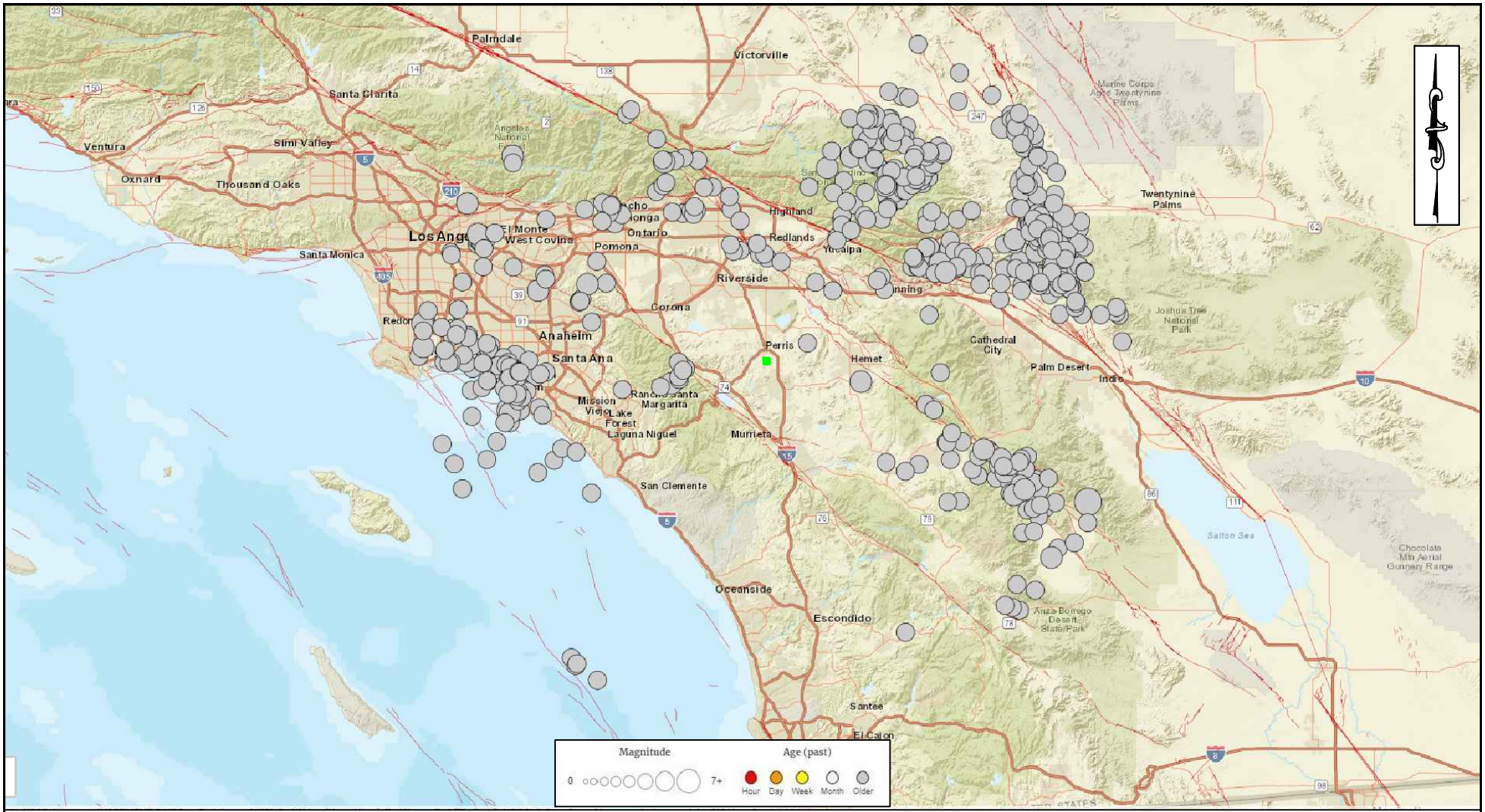
LOR GEOTECHNICAL GROUP, INC.



REGIONAL GEOLOGIC MAP

(Morton 2003)

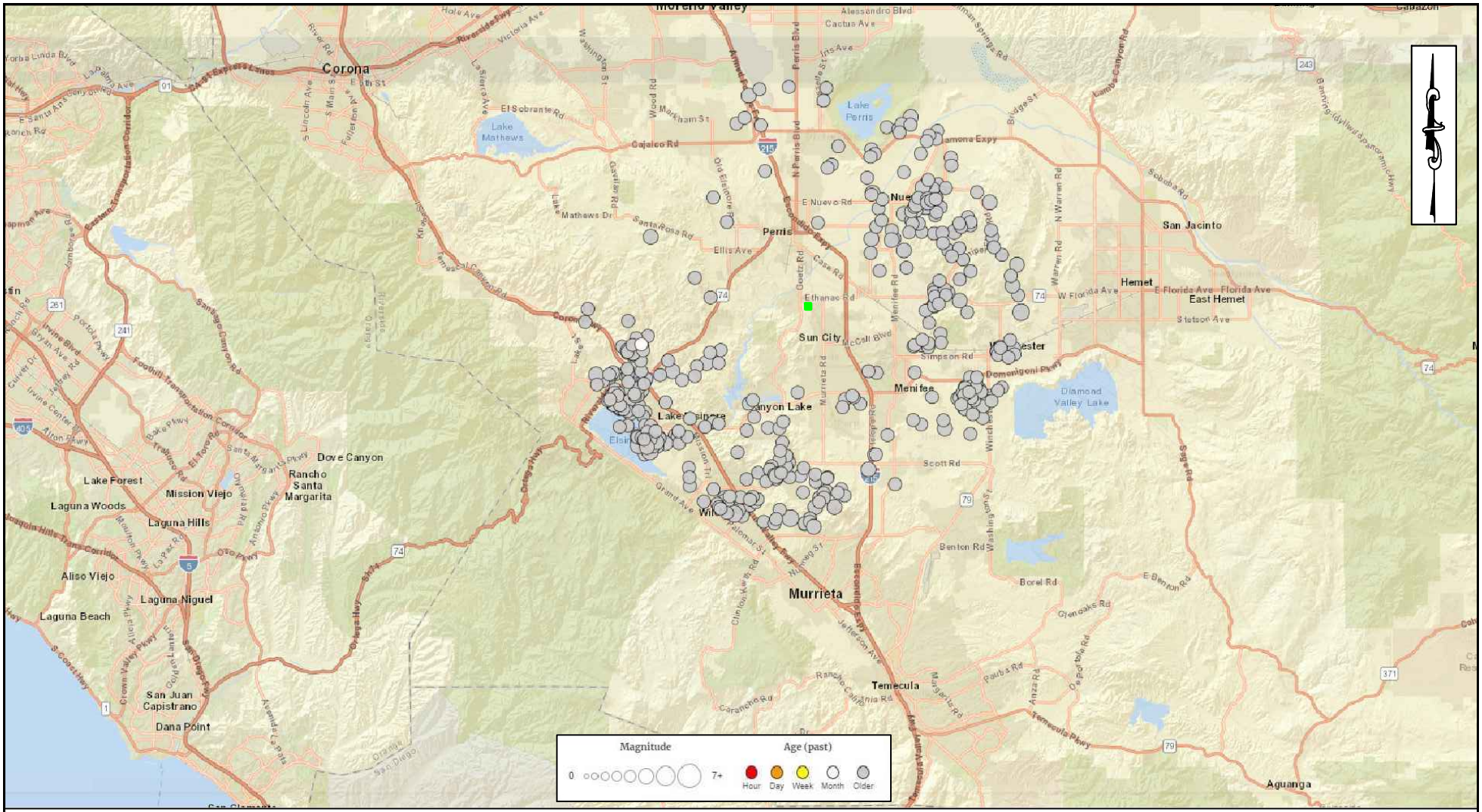
PROJECT:	APNs 330-180-006, –010, –029, and –046, Menifee, California	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC.	**ENCLOSURE:**	A-3
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	December 2021
		SCALE:	1" ≈ 4,000'



U.S. Geologic Survey (2021) real-time earthquake epicenter map. Plotted are 531 epicenters of instrument-recorded events from 01/01/32 to present (12/15/21) of local magnitude greater than M4.0 within a radius of ~62 miles (100 kilometers) of the site. Location accuracy varies. The site is indicated by the green square. The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 100km Radius

PROJECT:	APNs 330-180-006, –010, –029, and –046, Menifee, California	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC.	**ENCLOSURE:**	A-4
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	December 2021
		SCALE:	1" ≈ 40km



U.S. Geologic Survey (2021) real-time earthquake epicenter map. Plotted are 439 epicenters of instrument-recorded events from 01/01/78 to present (12/15/21) of local magnitude greater than M1.0 within a radius of ~9.2 miles (15 kilometers) of the site. Location accuracy varies. The site is indicated by the green square. The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 15km Radius

PROJECT:	APNs 330-180-006, –010, –029, and –046, Menifee, California	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC.	**ENCLOSURE:**	A-5
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	December 2021
		SCALE:	1" ≈ 10km

APPENDIX B

Field Investigation Program and Boring Logs

APPENDIX B
FIELD INVESTIGATION

Subsurface Exploration

Our subsurface exploration of the site consisted of drilling 12 exploratory borings to depths between approximately 15.25 to 30.42 feet below the existing ground surface using a Mobile B-61 drill rig on December 6 and7, 2021. The approximate locations of the borings are shown on Enclosure A-2 within Appendix A.

The drilling exploration was conducted using a Mobile B-61 drill rig equipped with 8-inch diameter hollow stem augers. The soils were continuously logged by a geologist from this firm who inspected the site, created detailed logs of the borings, obtained undisturbed, as well as disturbed, soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Relatively undisturbed samples of the subsoils were obtained at a maximum interval of 5 feet. The samples were recovered by using a California split barrel sampler of 2.50 inch inside diameter and 3.25 inch outside diameter or a Standard Penetration Sampler (SPT) from the ground surface to the total depth explored. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for field procedures (N60) which are included in the boring logs, Enclosures B-1 through B-12.

The undisturbed soil samples were retained in brass sample rings of 2.42 inches in diameter and 1.00 inch in height, and placed in sealed plastic containers. Disturbed soil samples were obtained at selected levels within the borings and placed in sealed containers for transport to our geotechnical laboratory.

All samples obtained were taken to our geotechnical laboratory for storage and testing. Detailed logs of the borings are presented on the enclosed Boring Logs, Enclosures B-1 through B-12. A Boring Log Legend is presented on Enclosure B-i. A Soil Classification Chart is presented as Enclosure B-ii.

CONSISTENCY OF SOIL

SANDS

SPT BLOWS	CONSISTENCY
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Over 50	Very Dense

COHESIVE SOILS

SPT BLOWS	CONSISTENCY
0-2	Very Soft
2-4	Soft
4-8	Medium
8-15	Stiff
15-30	Very Stiff
30-60	Hard
Over 60	Very Hard

SAMPLE KEY

Symbol	Description
	INDICATES CALIFORNIA SPLIT SPOON SOIL SAMPLE INDICATES BULK SAMPLE INDICATES SAND CONE OR NUCLEAR DENSITY TEST INDICATES STANDARD PENETRATION TEST (SPT) SOIL SAMPLE

TYPES OF LABORATORY TESTS

1	Atterberg Limits
2	Consolidation
3	Direct Shear (undisturbed or remolded)
4	Expansion Index
5	Hydrometer
6	Organic Content
7	Proctor (4", 6", or Cal216)
8	R-value
9	Sand Equivalent
10	Sieve Analysis
11	Soluble Sulfate Content
12	Swell
13	Wash 200 Sieve

BORING LOG LEGEND

PROJECT:	Proposed Industrial Developement	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ENCLOSURE:**	B-i
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	December 2021

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS — MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS — MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS — MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	
12"	3"	3/4"	No . 4	No. 10	No. 40	200	

(U.S. STANDARD SIEVE SIZE)

SOIL CLASSIFICATION CHART

PROJECT:	Proposed Industrial Developement	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ENCLOSURE:**	B-ii
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	December 2021

LOG OF BORING B-1

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0	24	1, 3, 4, 7, 8, 9, 10	20.6		107.2			SP CL	@ 0 feet, FILL: **POORLY GRADED SAND (arena sand).** @ 0.16 feet, OLDER ALLUVIUM: **LEAN CLAY with SAND, approximately 5% coarse grained sand, 10% medium grained sand, 20% fine grained sand, 65% clayey fines of low plasticity, red-brown, moist.**
5	56		8.5		112.9			SM	@ 5 feet, **SILTY SAND, approximately 10% coarse grained sand, 25% medium grained sand, 45% fine grained sand, 20% silty fines, yellow-brown, damp.**
									@ 7 feet, IGNEOUS BEDROCK: **GABBRO, moderately weathered, fine grained, dry.**
10	46 for 6"		1.5		122.9				
15	46 for 6"								@ 15 feet, no recovery, somewhat difficult drilling.
20	51 for 4"								@ 20 feet, no recovery. **END OF BORNG @ 20.25'** **Fill to 0.16'** **No groundwater** **Bedrock @ 7'**
25									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1461
		DATE DRILLED:	December 6, 2021
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-1

LOG OF BORING B-2

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0	17		19.9		107.0			CL	@ 0 feet, OLDER ALLUVIUM: LEAN CLAY with SAND, trace gravel to 1/2", approximately 5% coarse grained sand, 10% meidum grained sand, 25% fine grained sand, 60% clayey fines of low plasticty, red-brown, moist.
5	61 for 11"		15.0		115.4				@ 5 feet, IGNEOUS BEDROCK: GABBRO, highly weathered, coarse grained, damp.
	61 for 11"		10.0		118.7				
10	115 for 9"		5.9						@ 10 feet, slightly less weathered.
15	111 for 8"		11.2						END OF BORING @ 15.67' No fill No groundwater Bedrock @ 5'
20									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1464
LOR GEOTECHNICAL GROUP, INC.		**DATE DRILLED:**	December 6, 2021
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-2

LOG OF BORING B-3

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10, 11						SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 10% gravel to 3/4", 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 45% silty fines, red-brown, dry, loose.
	20		3.3		105.7				@ 2 feet, OLDER ALLUVIUM: SILTY SAND with GRAVEL, approximately 15% gravel to 3", 10% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 25% silty fines, red-brown, dry.
5	21		9.1		91.3			CL	@ 5 feet, LEAN CLAY with SAND, approximately 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 55% clayeye fines of low plasticity, red-brown, damp.
									@ 8 feet, IGNEOUS BEDROCK: slightly weathered, coarse grained.
10	63		10.7		109.0				
15	82		6.2						@ 15 feet, slightly weathered, difficult to drill.
20	134 for 9"		8.7						@ 20 feet, becomes fine grained.
25	73 for 5"		3.3						@ 25 feet, medium to coarse grained.
30	77 for 5"		5.3						END OF BORING @ 30.42'
									Fill to 2'
									No groundwater
35									Bedrock @ 8'

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1468
		DATE DRILLED:	December 6, 2021
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-3

LOG OF BORING B-4

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SC	@ 0 feet, FILL/TOPSOIL: **CLAYEY SAND, approximately 5% coarse grained sand, 25% medium grained sand, 40% fine grained sand, 30% clayey fines of low plasticity, red-brown, dry, loose.**
	10		4.7		98.2			SM	@ 2 feet, OLDER ALLUVIUM: **SILTY SAND, approximately 5% coarse grained sand, 10% medium grained sand, 60% fine grained sand, 35% silty fines with trace clay, red-brown, dry, some pinhole porosity.**
5	32		7.1		98.4				@ 5 feet, trace cobbles, no visible porosity, damp.
	33		9.5		108.1				@ 7.5 feet, IGNEOUS BEDROCK: **GABBRO, highly weathered, coarse grained, damp.**
10	84 for 11"		7.8		112.5				
15	78 for 9"		5.0						**END OF BORING @ 15.75'** **Fill to 2'** **No groundwater** **Bedrock @ 7.5'**
20									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1473
		DATE DRILLED:	December 6, 2021
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-4

LOG OF BORING B-5

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10						SC	@ 0 feet, FILL/TOPSOIL: CLAYEY SAND, approximately 5% gravel to 3/4", 5% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 40% clayey fines of low plasticity, red-brown, dry, loose.
	46		12.2		122.9				@ 2 feet, IGNEOUS BEDROCK: GABBRO, severly weathered, coarse grained, red-brown, damp.
5	57		9.0		138.4				@ 5 feet, becomes moderately weathered.
10	70 for 9"		3.9						
15	46 for 3"		7.9						END OF BORING @ 15.25' Fill to 2' No groundwater Bedrock @ 2'
20									

TEST DATA

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1468
		DATE DRILLED:	December 6, 2021
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-5

LOG OF BORING B-6

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0	41		7.8		130.0			CL	@ 0 feet, FILL/TOPSOIL: **LEAN CLAY with SAND, trace gravel to 1/2", approximately 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 55% clayey fines of low plasticity, red-brown, dry, loose.**
									@ 2 feet, IGNEOUS BEDROCK: **GABBRO, severly weathered, coarse grained, damp.**
5	70 for 11"		15.4						@ 5 feet, becomes moderately weathered, rings disturbed.
	93 for 10"		7.9						
10	65 for 6"		4.8						@ 10 feet, much less weathered.
15	65 for 6"		3.6						END OF BORING @ 15.5'
									Fill to 2'
									No groundwater
									Bedrock @ 2'
20									

TEST DATA

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1	
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1473	
LOR GEOTECHNICAL GROUP, INC.		**DATE DRILLED:**	December 6, 2021	
		EQUIPMENT:	Mobile B-61	
		HOLE DIA.: 8"	**ENCLOSURE:**	B-6

LOG OF BORING B-7

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0	58	3, 7, 9, 10	9.5		121.1			SM	@ 0 feet, FILL/TOPSOIL: **SILTY SAND, approximately 5% coarse grained sand, 30% medium grained sand, 35% fine grained sand, 30% silty fines with clay, red-brown, dry, loose.**
									@ 2 feet, IGNEOUS BEDROCK: **GABBRO, severly weathered, coarse grained, red-brown, damp.**
5	60		5.4		130.1				
10	100		4.8						@ 10 feet, becomes moderately weathered.
15	108 for 11"		6.5						@ 15 feet, becomes slightly weathered, fine grained.
20	117 for 11"		3.5						END OF BORING @ 20.92'
									Fill to 2'
									No groundwater
									Bedrock @ 2'
25									

TEST DATA

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1472
		DATE DRILLED:	December 7, 2021
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-7

LOG OF BORING B-8

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0	26		10.5		115.5			CL	@ 0 feet, FILL/TOPSOIL: **LEAN CLAY with SAND, approximately 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 55% clayey fines of low plasticity, red-brown, dry, loose.**
									@ 2 feet, OLDER ALLUVIUM: **LEAN CLAY with SAND, approximately 5% coarse grained sand, 15% medium grained sand, 25% fine grained sand, 55% clayey fines of low plasticity, red-brown, damp, some pinhole porosity.**
5	70		10.9		114.4				@ 4 feet, METAMORPHIC BEDROCK: **PHYLLITE, highly weathered, fine to medium grained, red-brown, damp.**
10	95		4.8						@ 10 feet, slightly to moderately weathered.
15	107 for 8"		2.7						@ 17 feet, difficult to drill.
									END OF BORING @ 18' due to refusal
20									Fill to 2'
									No groundwater
									Bedrock @ 4'
25									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1468
		DATE DRILLED:	December 7, 2021
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-8

LOG OF BORING B-9

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10, 11						CL	@ 0 feet, FILL/TOPSOIL: **LEAN CLAY with SAND, trace gravel to 1/2", trace coarse grained sand, 10% medium grained sand, 30% fine grained sand, 60% clayey fines of low plasticity, red-brown, loose.**
	35		13.3		106.1				@ 2 feet, METAMORPHIC BEDROCK: **PHYLLITE, severely weathered, fine to medium grained with clay, red-brown, damp.**
5	64		10.8		120.7				@ 5 feet, less weathered, fine grained, gray.
10	78		8.6						
15	96		5.9						
20	73 for 6"		5.9						END OF BORING @ 20.5'
25									Fill to 2'
									No groundwater
									Bedrock @ 2'

TEST DATA

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1463
		DATE DRILLED:	December 7, 2021
LOR GEOTECHNICAL GROUP, INC.		**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-9

LOG OF BORING B-10

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0								CL	@ 0 feet, FILL/TOPSOIL: **LEAN CLAY with SAND, approximately 5% coarse grained sand, 10% medium grained sand, 25% fine grained sand, 60% clayey fines of low plasticity, red-brown, dry, loose.**
	36		15.6		108.6				@ 2 feet, IGNEOUS BEDROCK: **GABBRO, severly weathered, contains clay, red-brown, damp.**
5	54		9.9		117.0				@ 5 feet, becomes moderately to highly weathered.
10	116 for 10"		12.6						
15	65 for 5"		6.8						@ 15 feet, less weathered.
20	115 for 9"		12.1						END OF BORING @ 20.75' Fill to 2' No groundwater Bedrock @ 2'
25									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1465
		DATE DRILLED:	December 7, 2021
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-10

LOG OF BORING B-11

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0	42		8.0		121.8			CL	@ 0 feet, FILL/TOPSOIL: **LEAN CLAY with SAND, approximately 5% coarse grained sand, 10% medium grained sand, 25% fine grained sand, 60% clayey fines of low plasticity, red-brown, dry, loose.**
									@ 2 feet, METAMORPHIC BEDROCK: **PHYLLITE, highly weathered, fine grained, gray.**
5	50		9.9		114.2				@ 5 feet, remains highly weathered.
10	117 for 11"		4.8						
15	107		5.3						@ 15 feet, less weathered.
20	115 for 11"		7.5						**END OF BORING @ 20.92'** **Fill to 2'** **No groundwater** **Bedrock @ 2'**
25									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1460
		DATE DRILLED:	December 7, 2021
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-11

LOG OF BORING B-12

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0	9, 10, 11							SC	@ 0 feet, FILL/TOPSOIL: **CLAYEY SAND, approximately 10% gravel to 3/4", 5% coarse grained sand, 10% medium grained sand, 35% fine grained sand, 40% clayey fines of low plasticity, red-brown, dry, loose.**
	61 for 8"		10.2		104.6				@ 2 feet, METAMORPHIC BEDROCK: **PHYLLITE, highly weathered, fine grained, tan, dramp.**
5	66 for 8"		3.1		119.2				@ 5 feet, less weathered, gray, dry.
10	65 for 5"		2.8						@ 10 feet, much less weathered, hard, somewhat difficult to drill.
15	65 for 2"								@ 15 feet, no recovery.
									END OF BORING @ 16' due to refusal
									Fill to 2' **No groundwater** **Bedrock @ 2'**
20									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**ELEVATION:**	1458
		DATE DRILLED:	December 7, 2021
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-12

APPENDIX C

Laboratory Testing Program and Test Results

APPENDIX C
LABORATORY TESTING

General

Selected soil samples obtained from the borings were tested in our geotechnical laboratory to evaluate the physical properties of the soils affecting foundation design and construction procedures. The laboratory testing program performed in conjunction with our investigation included moisture content, dry density, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, expansion index, Atterberg limits, and soluble sulfate content. Descriptions of the laboratory tests are presented in the following paragraphs:

Moisture Density Tests

The moisture content and dry density information provides an indirect measure of soil consistency for each stratum, and can also provide a correlation between soils on this site. The dry unit weight and field moisture content were determined for selected undisturbed samples, in accordance with ASTM D 2921 and ASTM D 2216, respectively, and the results are shown on the boring logs, Enclosures B-1 through B-12 for convenient correlation with the soil profile.

Laboratory Compaction

A selected soil sample was tested in the laboratory to determine compaction characteristics using the ASTM D 1557 compaction test method. The results are presented in the following table:

LABORATORY COMPACTION				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Maximum Dry Density (pcf)**	**Optimum Moisture Content (percent)**
B-1	0-3	(CL) Lean Clay with Sand	127.5	10.0
B-7	0-3	(SM) Silty Sand	126.5	11.5

Direct Shear Test

Shear tests are performed in general accordance with ASTM D 3080 with a direct shear machine at a constant rate-of-strain (0.04 inches/minute). The machine is designed to test a sample partially extruded from a sample ring in single shear. Samples are tested at varying normal loads in order to evaluate the shear strength parameters, angle of internal friction and cohesion. Samples are tested in remolded condition (90 percent relative compaction per ASTM D 1557) and soaked, to represent the worse case conditions expected in the field.

The results of the shear test on a selected soil sample is presented in the following table:

DIRECT SHEAR TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Apparent Cohesion (psf)**	**Angle of Internal Friction (degrees)**
B-1	0-3	(CL) Lean Clay with Sand	400	23
B-7	0-3	(SM) Silty Sand	500	31

Sieve Analysis

A quantitative determination of the grain size distribution was performed for selected samples in accordance with the ASTM D 422 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen. The results of the grain size distribution analyses are presented graphically on Enclosures C-1 and C-2.

Sand Equivalent

The sand equivalent of selected soils were evaluated using the California Sand Equivalent Test Method, Caltrans Number 217. The results of the sand equivalent tests are presented with the grain size distribution analyses on Enclosures C-1 and C-2.

R-Value Test

A soil sample was obtained at probable pavement subgrade level, and was tested to determine its R-value using the California R-Value Test Method, Caltrans Number 301.

The results of the R-value test is presented on Enclosure C-1.

Expansion Index Test

Remolded samples are tested to determine their expansion potential in accordance with the Expansion Index (EI) test. The test is performed in accordance with the Uniform Building Code Standard 18-2. The test result for a select soil sample is presented in the following table:

EXPANSION INDEX TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Expansion Index (EI)**	**Expansion Potential**
B-1	0-3	(CL) Lean Clay with Sand	44	Low

Expansion Index:	0-20	21-50	51-90	91-130
	Very low	Low	Medium	High

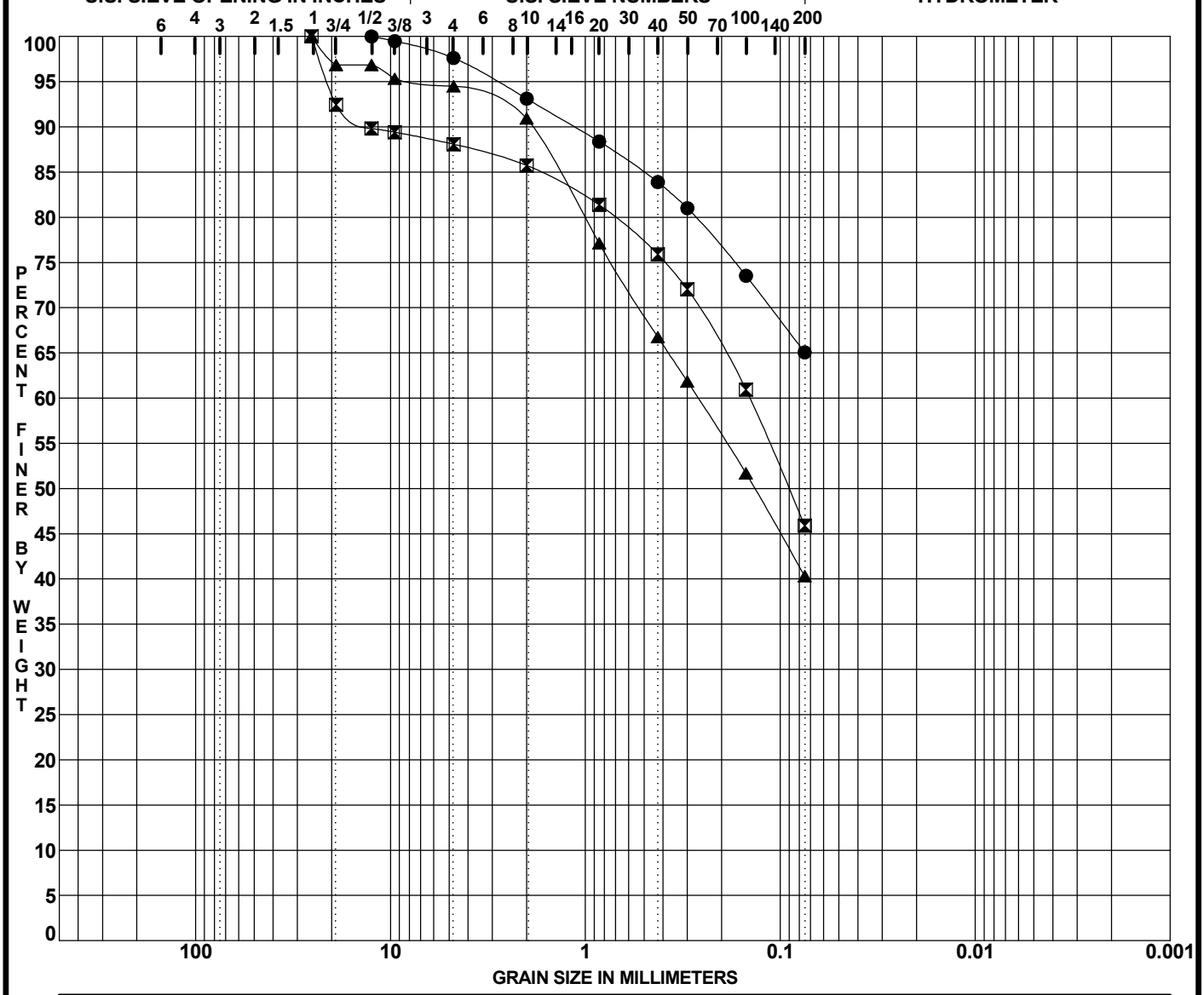
Atterberg Limits

Selected samples of the fine-grained soil units encountered at the site are tested for their Atterberg limits in accordance with ASTM D 4318. The results of these tests are presented on Enclosure C-3.

Soluble Sulfate Content Test

The soluble sulfate content of a selected subgrade soil was evaluated. The concentration of soluble sulfates in the soil was determined by measuring the optical density of a barium sulfate precipitate. The precipitate results from a reaction of barium chloride with water extractions from the soil sample. The measured optical density is correlated with readings on precipitates of known sulfate concentrations. The test result is presented in the following table:

SOLUBLE SULFATE CONTENT TEST			
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Sulfate Content (% by weight)**
B-3	0-3	(SM) Silty Sand	< 0.005
B-9	0-3	(CL) Lean Clay with Sand	< 0.005
B-12	0-3	(SC) Clayey Sand	< 0.005



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
●	B-01	@ 0-3'	(CL) Lean Clay with Sand	6	13	10	27		
⊠	B-03	@ 0-3'	(SM) Silty Sand	11	--				
▲	B-05	@ 0-3'	(SC) Clayey Sand	13	--				

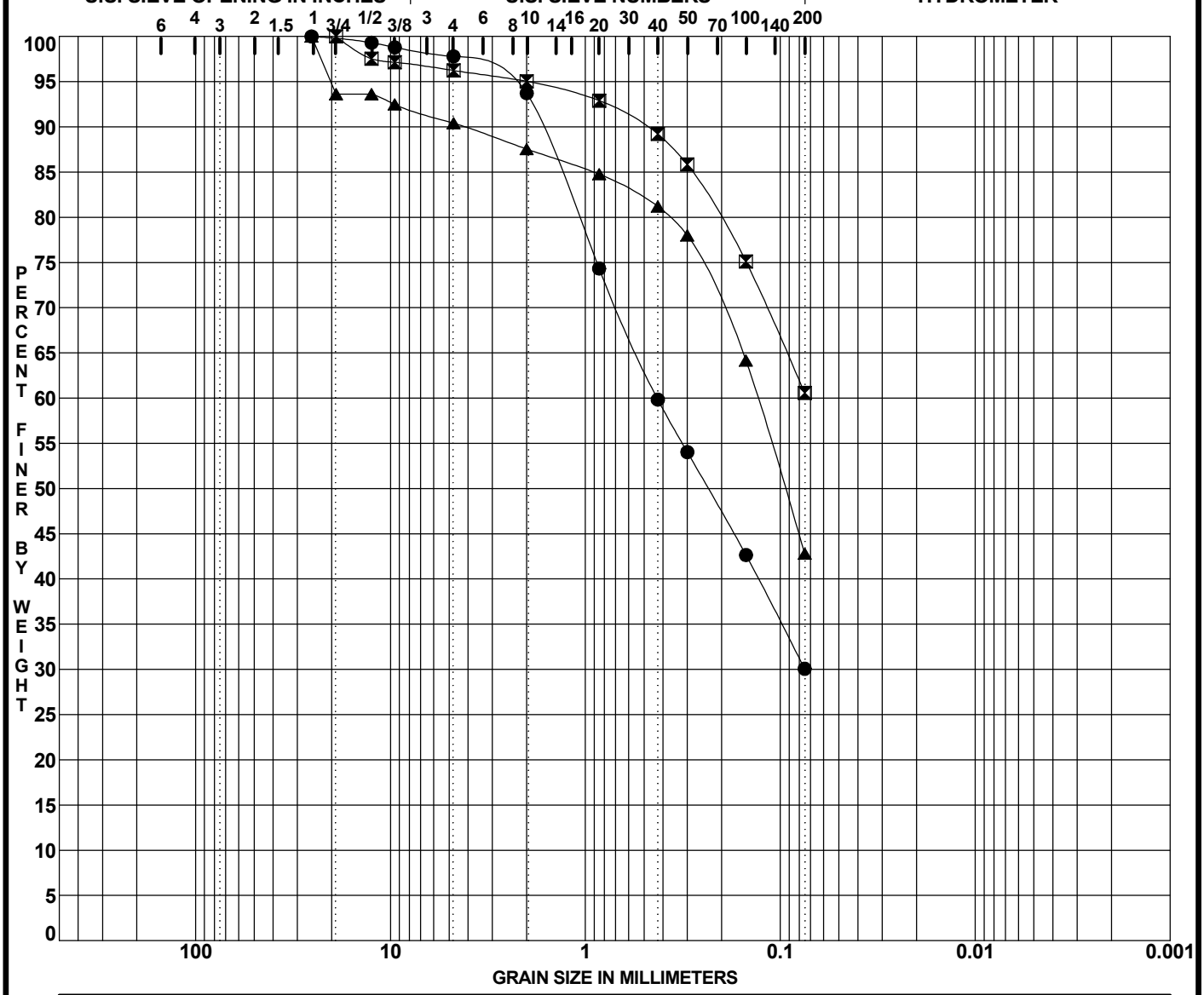
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-01	@ 0-3'	12.50				2.4	32.6	65.1	
⊠	B-03	@ 0-3'	25.40	0.14			11.9	42.2	45.9	
▲	B-05	@ 0-3'	25.40	0.26			5.5	54.2	40.3	

PROJECT: Proposed Industrial Development
PROJECT NO.: 23758.1
CLIENT: Compass Danbe Real Estate Partners, LLC
DATE: December 2021

GRADATION CURVES

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: C-1



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
●	B-07	@ 0-3'	(SM) Silty Sand	19	--				
⊠	B-09	@ 0-3'	(CL) Lean Clay with Sand	7	--				
▲	B-12	@ 0-3'	(SC) Clayey Sand	12	--				

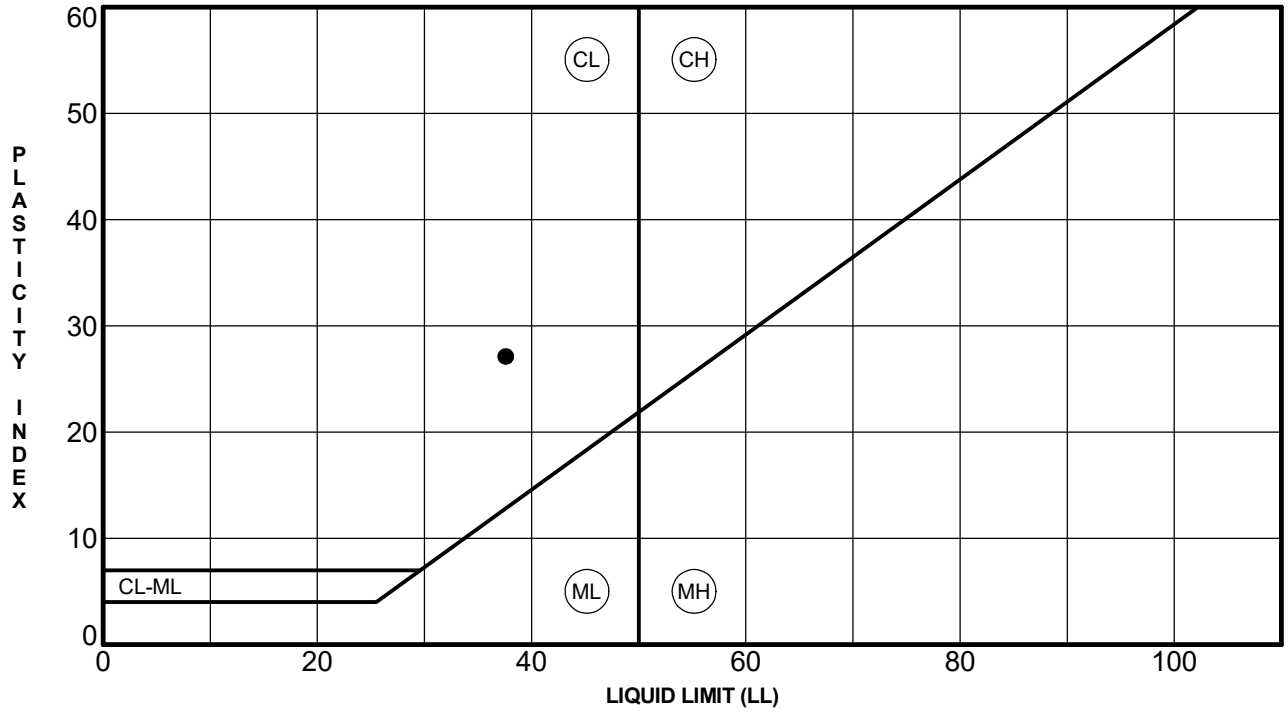
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-07	@ 0-3'	25.40	0.43			2.2	67.7	30.1	
⊠	B-09	@ 0-3'	19.00				3.8	35.7	60.6	
▲	B-12	@ 0-3'	25.40	0.13			9.6	47.6	42.8	

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**DATE:**	December 2021

GRADATION CURVES

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: C-2



Specimen Identification		LL	PL	PI	Fines	Classification
● B-01	@ 0-3'	38	10	27	65.1	(CL) Lean Clay with Sand

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23758.1
CLIENT:	Compass Danbe Real Estate Partners, LLC	**DATE:**	December 2021

ATTERBERG LIMITS RESULTS

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: C-3

APPENDIX D

Infiltration Test Results

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	APN's 330-180-006, -10, 029, and -046, Menifee	Test Date:	December 7, 2021
Project No.:	23758.1	Test Hole No.:	P-1
Soil Classificaiton:	Bedrock	Effective Hole Dia*:	4.8 in.
Depth of Test Hole:	10.0 ft.	Date Excavated:	December 6, 2021
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:17 AM	8:47 AM	30	0.50	0.50	50.00	91.00	120.00	120.00	41.00	49.50	0.7
2	8:47 AM	9:17 AM	30	0.50	1.00	48.00	84.00	120.00	120.00	36.00	54.00	0.8
3	9:17 AM	9:47 AM	30	0.50	1.50	48.00	82.50	120.00	120.00	34.50	54.75	0.9
4	9:47 AM	10:17 AM	30	0.50	2.00	49.00	81.00	120.00	120.00	32.00	55.00	0.9
5	10:17 AM	10:47 AM	30	0.50	2.50	48.00	79.00	120.00	120.00	31.00	56.50	1.0
6	10:47 AM	11:17 AM	30	0.50	3.00	48.00	78.50	120.00	120.00	30.50	56.75	1.0
7	11:17 AM	11:47 AM	30	0.50	3.50	48.00	78.00	120.00	120.00	30.00	57.00	1.0
8	11:47 AM	12:17 PM	30	0.50	4.00	48.00	78.00	120.00	120.00	30.00	57.00	1.0
9	12:17 PM	12:47 PM	30	0.50	4.50	48.00	78.50	120.00	120.00	30.50	56.75	1.0
10	12:47 PM	1:17 PM	30	0.50	5.00	48.00	78.00	120.00	120.00	30.00	57.00	1.0
11	1:17 PM	1:47 PM	30	0.50	5.50	48.00	78.00	120.00	120.00	30.00	57.00	1.0
12	1:47 PM	2:17 PM	30	0.50	6.00	48.00	78.00	120.00	120.00	30.00	57.00	1.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	72.00	
H_f	42.00	
ΔH	30.00	
H_{avg}	57.00	
I_t	**1.24**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	APN's 330-180-006, -10, 029, and -046, Menifee	Test Date:	December 7, 2021
Project No.:	23758.1	Test Hole No.:	P-2
Soil Classificaiton:	Bedrock	Effective Hole Dia*:	4.8 in.
Depth of Test Hole:	9.0 ft.	Date Excavated:	December 6, 2021
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:19 AM	8:49 AM	30	0.50	0.50	48.00	55.00	108.00	108.00	7.00	56.50	4.3
2	8:49 AM	9:19 AM	30	0.50	1.00	48.00	55.00	108.00	108.00	7.00	56.50	4.3
3	9:19 AM	9:49 AM	30	0.50	1.50	48.00	52.00	108.00	108.00	4.00	58.00	7.5
4	9:49 AM	10:19 AM	30	0.50	2.00	48.00	54.00	108.00	108.00	6.00	57.00	5.0
5	10:19 AM	10:49 AM	30	0.50	2.50	48.00	55.00	108.00	108.00	7.00	56.50	4.3
6	10:49 AM	11:19 AM	30	0.50	3.00	48.00	54.00	108.00	108.00	6.00	57.00	5.0
7	11:19 AM	11:49 AM	30	0.50	3.50	48.00	55.00	108.00	108.00	7.00	56.50	4.3
8	11:49 AM	12:19 PM	30	0.50	4.00	49.00	54.00	108.00	108.00	5.00	56.50	6.0
9	12:19 PM	12:49 PM	30	0.50	4.50	48.00	54.50	108.00	108.00	6.50	56.75	4.6
10	12:49 PM	1:19 PM	30	0.50	5.00	48.00	55.00	108.00	108.00	7.00	56.50	4.3
11	1:19 PM	1:49 PM	30	0.50	5.50	48.00	54.00	108.00	108.00	6.00	57.00	5.0
12	1:49 PM	2:19 PM	30	0.50	6.00	48.00	54.50	108.00	108.00	6.50	56.75	4.6

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	60.00	
H_f	53.50	
ΔH	6.50	
H_{avg}	56.75	
I_t	**0.27**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	APN's 330-180-006, -10, 029, and -046, Menifee	Test Date:	December 6, 2021
Project No.:	23758.1	Test Hole No.:	P-3
Soil Classificaiton:	Bedrock	Effective Hole Dia*:	4.8 in.
Depth of Test Hole:	8.0 ft.	Date Excavated:	December 6, 2021
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:25 AM	8:55 AM	30	0.50	0.50	46.00	59.00	96.00	96.00	13.00	43.50	2.3
2	8:55 AM	9:25 AM	30	0.50	1.00	47.00	59.00	96.00	96.00	12.00	43.00	2.5
3	9:25 AM	9:55 AM	30	0.50	1.50	46.00	57.50	96.00	96.00	11.50	44.25	2.6
4	9:55 AM	10:25 AM	30	0.50	2.00	44.00	56.00	96.00	96.00	12.00	46.00	2.5
5	10:25 AM	10:55 AM	30	0.50	2.50	46.00	58.00	96.00	96.00	12.00	44.00	2.5
6	10:55 AM	11:25 AM	30	0.50	3.00	47.00	58.00	96.00	96.00	11.00	43.50	2.7
7	11:25 AM	11:55 AM	30	0.50	3.50	48.00	58.00	96.00	96.00	10.00	43.00	3.0
8	11:55 AM	12:25 PM	30	0.50	4.00	48.00	58.00	96.00	96.00	10.00	43.00	3.0
9	12:25 PM	12:55 PM	30	0.50	4.50	47.00	57.00	96.00	96.00	10.00	44.00	3.0
10	12:55 PM	1:25 PM	30	0.50	5.00	48.00	58.00	96.00	96.00	10.00	43.00	3.0
11	1:25 PM	1:55 PM	30	0.50	5.50	46.00	56.00	96.00	96.00	10.00	45.00	3.0
12	1:55 PM	2:25 PM	30	0.50	6.00	48.00	58.00	96.00	96.00	10.00	43.00	3.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	48.00	
H_f	38.00	
ΔH	10.00	
H_{avg}	43.00	
I_t	**0.54**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	APN's 330-180-006, -10, 029, and -046, Menifee	Test Date:	December 6, 2021
Project No.:	23758.1	Test Hole No.:	P-4
Soil Classificaiton:	Bedrock	Effective Hole Dia*:	4.8 in.
Depth of Test Hole:	7.0 ft.	Date Excavated:	December 6, 2021
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	8:57 AM	9:27 AM	30	0.50	0.50	37.00	38.00	84.00	84.00	1.00	46.50	30.0
2	9:27 AM	9:57 AM	30	0.50	1.00	38.00	40.00	84.00	84.00	2.00	45.00	15.0
3	9:57 AM	10:27 AM	30	0.50	1.50	40.00	42.00	84.00	84.00	2.00	43.00	15.0
4	10:27 AM	10:57 AM	30	0.50	2.00	42.00	44.00	84.00	84.00	2.00	41.00	15.0
5	10:57 AM	11:27 AM	30	0.50	2.50	36.00	38.00	84.00	84.00	2.00	47.00	15.0
6	11:27 AM	11:57 AM	30	0.50	3.00	38.00	40.00	84.00	84.00	2.00	45.00	15.0
7	11:57 AM	12:27 PM	30	0.50	3.50	40.00	41.50	84.00	84.00	1.50	43.25	20.0
8	12:27 PM	12:57 PM	30	0.50	4.00	41.50	43.00	84.00	84.00	1.50	41.75	20.0
9	12:57 PM	1:27 PM	30	0.50	4.50	36.00	37.50	84.00	84.00	1.50	47.25	20.0
10	1:27 PM	1:57 PM	30	0.50	5.00	37.50	39.00	84.00	84.00	1.50	45.75	20.0
11	1:57 PM	2:27 PM	30	0.50	5.50	39.00	40.50	84.00	84.00	1.50	44.25	20.0
12	2:27 PM	2:57 PM	30	0.50	6.00	40.50	42.00	84.00	84.00	1.50	42.75	20.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	43.50	
H_f	42.00	
ΔH	1.50	
H_{avg}	42.75	
I_t	**0.08**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

N/A

PARTNER
Engineering and Science, Inc.



PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Residential Property
25025 Corsica Lane
Menifee, California 92585

Report Date: October 7, 2021
Partner Project No. 21-335922.1



Prepared for:

Danbe Real Estate Advisors
523 Main Street
El Segundo, California 92585

PARTNER
Engineering and Science, Inc.

October 7, 2021

Wayne Bush
Danbe Real Estate Advisors
523 Main Street
El Segundo, California 92585

Subject: Phase I Environmental Site Assessment
APN 330-180-029
25025 Corsica Lane
Menifee, California 92585
Partner Project No. 21-335922.1

Dear Mr. Bush:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Phase I Environmental Site Assessment* (Phase I ESA) report of the abovementioned address (the "subject property"). This assessment was performed in conformance with the scope and limitations as detailed in the ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at 619-925-9672 or MLambson@partneresi.com.

Sincerely,

DRAFT

Mark Lambson

Principal

EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in accordance with the scope of work and limitations of ASTM Standard Practice E1527-13, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by Danbe Real Estate Advisors for the property located at 25025 Corsica Lane in Menifee, Riverside County, California (the "subject property"). The Phase I Environmental Site Assessment is designed to provide Danbe Real Estate Advisors with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

Property Description

The subject property is located north of Corsica Lane and west of Wheat Street within a residential area of Riverside County. Please refer to the table below for further description of the subject property:

Subject Property Data	
Address(es):	25025 Corsica Lane, Menifee, California
Property Use:	Residential
Land Acreage (Ac):	1.82 Ac
Number of Buildings:	One dwelling; two sheds, and one steel framed garage
Number of Floors:	One
Gross Building Area (SF):	1,782
Date of Construction:	2002
Assessor's Parcel Number (APN):	330180029
Type of Construction:	Metal and wood framed
Current Tenants:	Residential
Site Assessment Performed By:	Jeremy Russell of Partner
Site Assessment Conducted On:	October 4, 2021

The subject property is currently occupied by residential development. Onsite operations consist of one single-story manufactured dwelling, two tool sheds, and one metal frame detached garage. In addition to the current structures, the subject property is also improved with a horse corral, a septic system located on the north side of the dwelling, and a water well located on the southeast corner.

According to available historical sources, the subject property was structurally unimproved as early as 1901; developed for agricultural uses between 1950 and circa 2000; and redeveloped for residential use circa 2002. Tenants on the subject property have included private residents (2002-present).

The immediately surrounding properties consist of undeveloped land and residential properties to the north; Agricultural land to the south across Corsica Lane; residential properties to the east; and agricultural land to the west.

Partner observed one water well located on the southeast corner of the subject property. According to a plate on the well housing, the well depth on July 30, 2018, was 250 feet bgs, and the static water depth was 49 feet bgs.

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- The subject property parcel was historically used for agricultural purposes. There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. The subject property is either paved over or covered by building structures that minimize direct contact to any potential remaining concentrations in the soil. Additionally, during previous site development activities, near surface soils (where residual agricultural chemical concentrations would have most likely been present, if at all) were likely mixed with fill material or disturbed during grading. Also, it is common that engineered fill material is placed over underlying soils as part of the development activities. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of 25025 Corsica Lane in Menifee, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions or environmental issues in connection with the subject property.

Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

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1.0 INTRODUCTION

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM Standard Practice E1527-13 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) for the property located at 25025 Corsica Lane in Menifee, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this scope of work are described in the report.

1.1 Purpose

The purpose of this ESA is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E1527-13) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property; and 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing; 2) evaluate the subject property's overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property; and/or 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E1527-13 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

1.2 Scope of Work

The scope of work for this ESA is in accordance with the requirements of ASTM Standard E1527-13. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor. Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or former hazardous substances usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-13, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater on the subject property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in

order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

1.3 Limitations

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: ACMs, LBP, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

1.4 User Reliance

Danbe Real Estate Advisors engaged Partner to perform this assessment in accordance with an agreement governing the nature, scope, and purpose of the work as well as other matters critical to the engagement. All reports, both verbal and written, are for the sole use and benefit of Danbe Real Estate Advisors. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with Partner granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any course of action against Partner, its officers, employees, vendors, successors or assigns. Any such

unauthorized user shall be responsible to protect, indemnify and hold Partner, Client and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such Use. Unauthorized use of this report shall constitute acceptance of and commitment to these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted. Additional legal penalties may apply.

1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-13.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.
- Partner requested information relative to deed restrictions and environmental liens, a title search, and completion of the AAI User Questionnaire from the Report User. This information was not provided at the time of the assessment.
- Partner was unable to determine the property use at strict 5-year intervals, which constitutes a data gap. Except for recorded land title records, which were not considered to be sufficiently useful, Partner reviewed all standard historical sources and conducted appropriate interviews.
- Partner submitted Freedom of Information Act (FOIA) requests to the City of Menifee for information pertaining to development records for the subject property. Riverside County Department of Environmental Health was contacted regarding the on-site septic system and well water system As of this writing, these agencies have not responded to Partner's request. Based on information obtained from other sources, this limitation is not expected to alter the overall findings of this assessment.

Due to time constraints associated with this report, the Client has requested the report despite the above-listed limitations.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property at 25025 Corsica Lane in Menifee, California is located north of Corsica Lane and west of Wheat Street. According to the Riverside County Assessor, the subject property is legally described as

> "*1.82 ACRES NET IN PAR 1 PM 086/031 PM 14619 Subdivision Name PM 14619 Acres 001.82 NET Lot Type Parcel Parcel 1 Rec Map Type Parcel Map Map Plat B 086 Map Plat P 031 Manuf Name GOLDENWEST Year 2002 Serial Number GOCA21L29633A Decal Number 8691651 HCD 364578 Serial Number GOCA21L29633B HCD 364579*".

Ownership was identified on a provided title report as Rivera.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, Figure 3: Topographic Map, and Appendix A: Site Photographs for the location and site characteristics of the subject property.

2.2 Current Property Use

The subject property is currently occupied by a residential development. Onsite operations consist of one single-story manufactured dwelling, two tool sheds, and one metal frame detached automobile garage. In addition to the current structures, the subject property is also improved with a horse corral, a septic system located on the north side of the dwelling, and a water well located on the southeast corner.

The subject property is designated zoned Economic Development Corridor - Northern Gateway (EDC-NG) by the City of Menifee.

The subject property was not identified in the regulatory database report, as further discussed in Section 4.2.

2.3 Current Use of Adjacent Properties

The subject property is located within a mixed commercial and residential area of Riverside County. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

Immediately Surrounding Properties	
North:	Undeveloped land and residential dwellings
South:	Agricultural land
East:	Residential dwelling (25151 Corsica Lane)
West:	Agricultural land

The adjacent property to the east was identified as a RCRA NonGen / NLR site in the regulatory database report of Section 4.2.

2.4 Physical Setting Sources

2.4.1 Topography

The United States Geological Survey (USGS) *Romoland, California* Quadrangle 7.5-minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located at approximately 1,460 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping gently toward the northeast. The subject property is depicted on the 1979 map as undeveloped.

A copy of the most recent topographic map is included as Figure 3 of this report.

2.4.2 Hydrology

According to topographic map interpretation, the direction of groundwater flow in the vicinity of the subject property is inferred to be toward the northeast. The nearest surface water in the vicinity of the subject property is the San Jacinto River located approximately two miles northwest of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this assessment.

According to available information, a public water system operated by the Eastern Municipal Water District serves the subject property vicinity. The sources of public water for Menifee are surface waters from the State Water Project and groundwater from EMWD wells.

Partner observed one water well located on the southeast corner of the subject property. According to a plate on the well housing, the well depth on July 30, 2018, was 250 feet bgs, and the static water depth was 49 feet bgs.

2.4.3 Geology/Soils

The subject property is situated within the Perris Plain of the northern Peninsular Ranges geomorphic province of the State of California. The uppermost geologic formation underlying the soils at the subject property are late Cenozoic alluvial sedimentary deposits. The deposits comprise the underlying stratigraphy and consists mostly of gravel, sand, silt, and clay deposited in stream channel, point bar, and alluvial fan environments. The deposits are estimated to be over 2000 feet. The Cenozoic deposits unconformably overlie Cretaceous sedimentary rocks or basement rocks.

Based on information obtained from the USDA Natural Resources Conservation Service Web Soil Survey database, the subject property is mapped as the Auld clay, 2 to 8 percent slopes. The soil series consists of moderately deep, well drained, clay, loam, overlying weathered bedrock. These soils are on hills.

2.4.4 Flood Zone Information

Partner performed a review of the Flood Insurance Rate Map, published by the Federal Emergency Management Agency. According to Community Panel Number 06065C2055H, effective on 08/18/2014, the subject property appears to be located in Zone X, an area located outside of the 100-year and 500-year flood plains.

A copy of the reviewed flood map is not included in Appendix B of this report.

3.0 HISTORICAL INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

Historical Use Information		
Period/Date	**Source**	**Description/Use**
1901	Topographic Maps	Structurally unimproved
1938-2004	Aerial Photographs, Topographic Maps	Agricultural and residential
2002-Present	Aerial Photographs, Building Records, City Directories, Interviews, Onsite Observations	Existing residence

Tenants on the subject property include residential occupants (2002-Present). No potential environmental concerns were identified in association with the current or former use of the subject property.

3.1 Aerial Photograph Review

Partner obtained available aerial photographs of the subject property and surrounding area from Environmental Data Resources (EDR) on September 30, 2021. The following was observed on the subject property and adjacent properties during the aerial photograph review:

Date: 1938		***Scale: 1"=500'***
Subject Property:	Appeared undeveloped	
North:	Appeared undeveloped	
South:	Appeared undeveloped	
East:	Appeared undeveloped	
West:	Appeared undeveloped	

Date: 1949, 1953		***Scale: 1"=500'***
Subject Property:	No significant changes visible	
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 1961		***Scale: 1"=500'***
Subject Property:	Appeared developed for agricultural use (dry farming)	
North:	Appeared developed for agricultural use (dry farming)	
South:	Appeared developed for agricultural use (dry farming)	
East:	Appeared developed for agricultural use (dry farming)	
West:	Appeared developed for agricultural use (dry farming)	

Date: 1967, 1974, 1978,1985, 1989		***Scale: 1"=500'***
Subject Property:	No significant changes visible	
North:	No significant changes visible	
South:	No significant changes visible	
East:	No significant changes visible	
West:	No significant changes visible	

Date: 1994, 1997	***Scale: 1"=500'***
Subject Property:	No significant changes visible
North:	No significant changes visible. Developed with what appeared to be a residential property further north.
South:	No significant changes visible
East:	No significant changes visible. Developed with what appeared to be residential properties further east.
West:	No significant changes visible

Date: 2002	***Scale: 1"=500'***
Subject Property:	Small buildings appear on the northwest corner. No other significant changes visible
North:	No significant changes visible
South:	No significant changes visible
East:	Developed with what appeared to be a residential property
West:	No significant changes visible

Date: 2006	***Scale: 1"=500'***
Subject Property:	Developed with what appears to be a residential structure on the south side, and two smaller structures on the east and north sides
North:	Developed with what appeared to be one structure and three or four smaller structures
South:	No significant changes visible
East:	No significant changes visible
West:	No significant changes visible. Developed with what appeared to be residential tract houses further west

Date: 2009	***Scale: 1"=500'***
Subject Property:	Developed with what appeared to be an additional structure adjacent south of the residential structure
North:	No significant changes visible
South:	No significant changes visible
East:	No significant changes visible
West:	No significant changes visible

Date: 2012, 2016	***Scale: 1"=500'***
Subject Property:	No significant changes visible
North:	No significant changes visible
South:	No significant changes visible
East:	No significant changes visible
West:	No significant changes visible

Copies of reviewed aerial photographs are included in Appendix B of this report.

3.2 Fire Insurance Maps

Partner reviewed the collection of Sanborn Fire insurance maps from EDR on September 30, 2021. Sanborn map coverage was not available for the subject property.

3.3 City Directories

Partner reviewed historical city directories obtained from EDR on October 05, 2021, for past names and businesses that were listed for the subject property and adjacent properties. The findings are presented in the following table:

City Directory Search for 25025 Corsica Lane (Subject Property)	
Year(s)	**Occupant Listed**
1971, 1976, 1980, 1985, 1990, 1995, 2000, 2005	No listings
2010, 2014, 2017	Kenneth MacPherson

According to the city directory review, the subject property has been occupied by a residential tenant since at least 2010.

City Directory Search for Adjacent Properties	
Year(s)	**Occupant Listed**
1971, 1976, 1980, 1985, 1990, 1995, 2000	No listings (25151 Corsica Lane)
2005, 2010, 2014, 2017	Norman Carmichael

Based on the city directory review, no environmentally sensitive listings were identified for the adjacent property addresses.

Copies of reviewed city directories are included in Appendix B of this report.

3.4 Historical Topographic Maps

Partner reviewed historical topographic maps obtained from EDR on September 30, 2021. The following was observed on the subject property and adjacent properties during the topographic map review:

Date: 1901	
Subject Property:	Undeveloped
North:	Undeveloped
South:	Undeveloped
East:	Undeveloped
West:	Undeveloped

Date: 1942, 1943, 1953, 1973, 1979	
Subject Property:	No significant changes depicted
North:	No significant changes depicted
South:	No significant changes depicted
East:	No significant changes depicted
West:	No significant changes depicted

Copies of reviewed topographic maps are included in Appendix B of this report.

4.0 REGULATORY RECORDS REVIEW

4.1 Regulatory Agencies

4.1.1 State Department

Regulatory Agency Data	
Name of Agency:	California Environmental Protection Agency (CalEPA), Department of Public Health
Point of Contact:	Not Provided
Agency Address:	1001 I Street, Sacramento, California
Agency Phone Number:	926 323 2514
Date of Contact:	October 1, 2021
Method of Communication:	Online
Summary of Communication:	The CalEPA manages the following State agencies: *Air Resources Board (ARB), Department of Resources Recycling and Recovery (CalRecycle), Department of Pesticide Regulation (DPR), Department of Toxic Substances Control (DTSC), Office of Environmental Health Hazard Assessment (OEHHA), and the State Water Resources Control Board (SWRCB)*. These agencies are discussed individually, where applicable, in the following sections. The subject property was not identified for records maintained by CalRecycle, for pesticides with the DPR databases or for hazardous substance risk evaluation by the OEHHA.

4.1.2 Health Department

Regulatory Agency Data	
Name of Agency:	Riverside County Environmental Health Department (RCEHD)
Point of Contact:	Not Provided
Agency Address:	4080 Lemon Street, Riverside, California
Agency Phone Number:	(951) 955-8980
Date of Contact:	October 1, 2021
Method of Communication:	Email
Summary of Communication:	The RCEHD is the Certified Unified Program Agency (CUPA) for Riverside County. The RCEHD CUPA is responsible for overseeing the six hazardous materials programs in the County: *Inspecting facilities that handle hazardous materials, generate hazardous waste, treat hazardous waste, own/operate underground storage tanks, own/operate aboveground petroleum storage tanks, or handle other materials subject to the California Accidental Release Program (CalARP)*. Partner also submitted a request for records of the septic system and water well. At the time of this report the RCDEH had not responded to Partner's request.

4.1.3 Fire Department

Regulatory Agency Data	
Name of Agency:	Riverside County Fire Department (RCFD)
Point of Contact:	Not Provided
Agency Address:	210 West San Jacinto Avenue, Menifee, CA
Agency Phone Number:	(760) 940 6900
Date of Contact:	October 1, 2021
Method of Communication:	Telephone
Summary of Communication:	According to the RCFD, no records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the RCFD. Such records are maintained by the RCEHD.

4.1.4 Air Pollution Control Agency

Regulatory Agency Data	
Name of Agency:	South Coast Air Quality Management District (SCAQMD)
Point of Contact:	N/A
Agency Address:	21865 Copley Drive, Diamond Bar, California
Agency Phone Number:	909 396 2000
Date of Contact:	October 1, 2021
Method of Communication:	http://www3.aqmd.gov/webappl/fim/prog/search.aspx
Summary of Communication:	The subject property was not identified on the SCAQMD database website. No Notices of Violation (NOV), or Notices to Comply (NTC) or the presence of AULs, dry cleaning machines were on file for the subject property with the SCAQMD.

4.1.5 Regional Water Quality Agency

Regulatory Agency Data	
Name of Agency:	Santa Ana Regional Water Quality Control Board (SARWQCB)
Point of Contact:	N/A
Agency Address:	3737 Main Street, Riverside, California
Agency Phone Number:	909 782 4130
Date of Contact:	October 2, 2021
Method of Communication:	http://geotracker.waterboards.ca.gov/
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the SARWQCB.

4.1.6 Department of Toxic Substances Control

Regulatory Agency Data	
Name of Agency:	California Department of Toxic Substances Control (DTSC)
Point of Contact:	N/A
Agency Address:	5796 Corporate Avenue, Cypress, California
Agency Phone Number:	714 484 5300
Date of Contact:	October 1, 2021
Method of Communication:	http://hwts.dtsc.ca.gov/report_search.cfm?id=5
Summary of Communication:	The subject property was not identified on the DTSC Hazardous Waste Tracking System (HWTS) for disposal of hazardous wastes or the EnviroStor database for known release cases.

4.1.7 Building Department

Regulatory Agency Data	
Name of Agency:	City of Menifee Building Department (MBD) via City Clerk
Point of Contact:	Ms. Sarah Manwaring
Agency Address:	29844 Haun Road Menifee, CA 92586
Agency Phone Number:	951-723-3708
Date of Contact:	October 1, 2021
Method of Communication:	Email
Summary of Communication:	At the time of this report the RCDEH had not responded to Partner's request. Partner also accessed the County of Riverside Transportation and Land Management Agency Online Services database. No other building information was identified on the database. The following information was obtained:

Building Records Reviewed for 25025 Corsica Lane (Subject Property)		
Year(s)	**Owner/Applicant**	**Description**
2002	Robertson Rae	Permits BMR021151 and BMR021152 issued to install one manufactured house and permanent foundation on 25025 Corsica Lane

4.1.8 Planning Department

Regulatory Agency Data	
Name of Agency:	City of Menifee Planning Department (MPD)
Point of Contact:	N/A
Agency Address:	101 North D Street, Menifee, CA
Agency Phone Number:	951 943 6100
Date of Contact:	October 1, 2021
Method of Communication:	Online zoning map
Summary of Communication:	According to records reviewed, the subject property is zoned Economic Development Corridor - Northern Gateway (EDC-NG) by the City of Menifee.

4.1.9 Oil & Gas Exploration

Regulatory Agency Data	
Name of Agency:	California Division of Geologic Energy Management (CalGEM)
Point of Contact:	N/A
Agency Address:	801 K Street, Sacramento, California
Agency Phone Number:	(916) 324-0850
Date of Contact:	October 1, 2021
Method of Communication:	Online http://maps.conservation.ca.gov/doggr/#openModal
Summary of Communication:	According to the CalGEM interactive website no oil, gas, or geothermal wells were identified on or adjacent to the subject property.

4.1.10 Assessor's Office

Regulatory Agency Data	
Name of Agency:	Riverside County Assessor (RCA)
Point of Contact:	N/A
Agency Address:	2720 Gateway Drive, Riverside, CA 92507
Agency Phone Number:	N/A
Date of Contact:	September 30, 2021
Method of Communication:	Online
Summary of Communication:	According to records reviewed, the subject property is identified by Assessor Parcel Number (APN) 330180029 that totaled 1.82 acres. No ownership information was identified on the reports for the subject property.

Copies of pertinent documents are included in Appendix B of this report.

4.2 Mapped Database Records Search

Information from standard federal, state, county, and city environmental record sources were provided by Environmental Data Resources, Inc. (EDR). Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet.

Using the ASTM definition of migration, Partner considers the migration of hazardous substances or petroleum products in any form onto the subject property during the evaluation of each site listed on the radius report, which includes solid, liquid, and vapor.

4.2.1 Regulatory Database Summary

Radius Report Data

Database	Search Radius (mile)	Subject Property	Adjacent Properties	Sites of Concern
Federal NPL or Delisted NPL Site	1.00	N	N	N
Federal CERCLIS Site	0.50	N	N	N
Federal CERCLIS-NFRAP Site	0.50	N	N	N
Federal RCRA CORRACTS Facility	1.00	N	N	N
Federal RCRA TSDF Facility	0.50	N	N	N
Federal RCRA Generators Site (LQG, SQG, CESQG)	0.25	N	**Y**	N
Federal IC/EC Registries	0.50	N	N	N
Federal ERNS Site	Subject Property	N	N	N
State/Tribal Equivalent NPL	1.00	N	N	N
State/Tribal Equivalent CERCLIS	1.00	N	N	N
State/Tribal Landfill/Solid Waste Disposal Site	0.50	N	N	N
State/Tribal Leaking Storage Tank Site	0.50	N	N	N
State/Tribal Registered Storage Tank Sites (UST/AST)	0.25	N	N	N
State/Tribal Voluntary Cleanup Sites (VCP)	0.50	N	N	N
State/Tribal Spills	0.50	N	N	N
Federal Brownfield Sites	0.50	N	N	N
State Brownfield Sites	0.50	N	N	N
EDR MGP	Varies	N	N	N
EDR US Hist Auto Station	Varies	N	N	N
EDR US Hist Cleaners	Varies	N	N	N

4.2.2 Subject Property Listings

The subject property was not identified in the regulatory database report.

4.2.3 Adjacent Property Listings

The adjacent property to the east was identified as a RCRA NonGen / NLR site, as discussed below:

- The property, identified as NORMAN CARMICHAEL at 25151 Corsica Lane, is located adjacent to the east of the subject property. This site was listed on the RCRA NonGen / NLR database for generation of hazardous wastes. No violations or evaluations were reported. Based on the lack of releases or violations associated with the permitting and the regulatory status, this listing is not expected to represent a significant environmental concern and it is unlikely that a regulatory file review for this site would alter the findings of this assessment.

Based on the findings, vapor migration is not expected to represent a significant environmental concern at this time.

4.2.4 Sites of Concern Listings

No sites of concern are identified in the regulatory database report.

4.2.5 Orphan Listings

No orphan listings of concern are identified in the regulatory database report.

A copy of the regulatory database report is included in Appendix C of this report.

5.0 USER PROVIDED INFORMATION AND INTERVIEWS

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. The *User* should provide the following information to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiries* is not complete. The *User* is asked to provide information or knowledge of the following:

- Review Title and Judicial Records for Environmental Liens and AULs
- Specialized Knowledge or Experience of the User
- Actual Knowledge of the User
- Reason for Significantly Lower Purchase Price
- Commonly Known or *Reasonably Ascertainable* information
- Degree of Obviousness
- Reason for Preparation of this Phase I ESA

Fulfillment of these user responsibilities is key to qualification for the identified defenses to CERCLA liability. Partner requested our Client to provide information to satisfy User Responsibilities as identified in Section 6 of the ASTM guidance.

Pursuant to ASTM E1527-13, Partner requested the following site information from Danbe Real Estate Advisors (User of this report).

User Responsibilities

Item	Provided By User	Not Provided By User	Discussed Below	Does Not Apply
AAI User Questionnaire			**X**	
Title Records, Environmental Liens, and AULs			**X**	
Specialized Knowledge			**X**	
Actual Knowledge			**X**	
Valuation Reduction for Environmental Issues			**X**	
Identification of Key Site Manager	**Section 5.1.3**			
Reason for Performing Phase I ESA	**Section 1.1**			
Prior Environmental Reports		**X**		
Other		**X**		

5.1 Interviews

5.1.1 Interview with Owner

The owner of the subject property, Mr. George Rivera, was not aware of any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or

petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to Mr. Rivera, the subject property was developed in 2002 for residential use. Mr. Rivera had no knowledge of the prior use of the subject property. Mr. Rivera further stated that there are no USTs, ASTs, clarifiers, oil/water separators, groundwater monitoring wells, or hazardous substance use/storage/generation on the subject property to the best of his knowledge.

Mr. Rivera identified a subgrade septic system installed on the north side of the dwelling, and a water well located on the southeast corner of the subject property. According to Mr. Rivera, the septic system and water well were installed prior to acquisition of the subject property.

5.1.2 Interview with Report User

Mr. Mark Bachli, Danbe Real Estate Advisors, the client, indicated that he had no information pertaining to any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products. According to Mr. Bachli, the subject property has been developed for residential use. Prior to that, the subject property was undeveloped. Mr. Bachli further stated that there are no USTs, ASTs, clarifiers, oil/water separators, groundwater monitoring wells, or hazardous substance use/storage/generation on the subject property to the best of his knowledge.

5.1.3 Interview with Key Site Manager

The owner is the key site manager. His interview id found above.

5.1.4 Interviews with Past Owners, Operators and Occupants

Interviews with past owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap.

5.1.5 Interview with Others

As the subject property is not an abandoned property as defined in ASTM 1527-13, interview with others were not performed.

5.2 User Provided Information

5.2.1 Title Records, Environmental Liens, and AULs

Partner was provided with title records for review as part of this assessment.

COMMITMENT FOR TITLE INSURANCE, 25025 Corsica Lane, Menifee, CA by First American Title Insurance Company (April 2021)

No environmental liens or AULs were identified for the subject property.

Copies of pertinent pages are included in Appendix B of this report.

5.2.2 Specialized Knowledge

No specialized knowledge of environmental conditions associated with the subject property was provided by the User at the time of the assessment.

5.2.3 Actual Knowledge of the User

No actual knowledge of any environmental lien or AULs encumbering the subject property or in connection with the subject property was provided by the User at the time of the assessment.

5.2.4 Valuation Reduction for Environmental Issues

No knowledge of valuation reductions associated with the subject property was provided by the User at the time of the assessment.

5.2.5 Commonly Known or Reasonably Ascertainable Information

The User did not provide information that is commonly known or *reasonably ascertainable* within the local community about the subject property at the time of the assessment.

5.2.6 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to Partner for review during the course of this assessment.

6.0 SITE RECONNAISSANCE

The weather at the time of the site visit was sunny and clear. Refer to Section 1.5 for limitations encountered during the field reconnaissance and Sections 2.1 and 2.2 for subject property operations. The table below provides the site assessment details:

Site Assessment Data	
Site Assessment Performed By:	Jeremy Russell
Site Assessment Conducted On:	October 4, 2021

The table below provides the subject property personnel interviewed during the field reconnaissance:

Site Visit Personnel for 25025 Corsica Lane (Subject Property)			
Name	**Title/Role**	**Contact Number**	**Site Walk* Yes/No**
Mr. George Rivera	Owner/Occupant	Not provided	Yes

* Accompanied Partner during the field reconnaissance activities and provided information pertaining to the current operations and maintenance of the subject property

No potential environmental concerns were identified during the onsite reconnaissance.

6.1 General Site Characteristics

6.1.1 Solid Waste Disposal

Solid waste generated at the subject property is disposed of in trash cans located on the subject property. An independent solid waste disposal contractor removes the solid waste from the subject property. No evidence of illegal dumping of solid waste was observed during the Partner site reconnaissance.

6.1.2 Sewage Discharge and Disposal

Sanitary discharges on the subject property are directed into an onsite septic system. No wastewater treatment facilities or septic systems were observed or reported on the subject property.

6.1.3 Surface Water Drainage

Storm water is removed from the subject property primarily by sheet flow action across the ground surface toward topographic lower areas on and around the subject property. The subject property is not connected to a municipal owned and maintained sewer system.

The subject property does not appear to be a designated wetland area, based on information obtained from the United States Fish & Wildlife Service; however, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. No surface impoundments, wetlands, natural catch basins, settling ponds, or lagoons are located on the subject property. No drywells were identified on the subject property.

6.1.4 Source of Heating and Cooling

Heating and cooling systems as well as domestic hot water equipment are fueled by electricity/natural gas provided by Southern California Edison and Southern California Gas Company. The mechanical system is

comprised of a split system with a central unit and interior air-handler and exterior condenser units. Hot water is provided by an individual natural gas water heater.

6.1.5 Wells and Cisterns

No aboveground evidence of cisterns was observed during the site reconnaissance.

Partner observed one water well located on the southeast corner of the subject property. According to a plate on the well housing, the well depth on July 30, 2018, was 250 feet bgs, and the static water depth was 49 feet bgs. According to Mr. Rivera, the water well was installed prior to acquisition of the subject property.

6.1.6 Wastewater

Domestic wastewater generated at the subject property is disposed by means of an onsite septic system. No industrial process is currently performed at the subject property.

6.1.7 Septic Systems

An onsite septic system was observed on the subject property. According to Mr. Rivera, the septic system was installed prior to acquisition of the subject property and he had no information pertaining to the capacity of the septic tank.

6.1.8 Additional Site Observations

No additional general site characteristics were observed during the site reconnaissance.

6.2 Potential Environmental Hazards

6.2.1 Hazardous Substances and Petroleum Products Used or Stored at the Site

No evidence of the use of reportable quantities of hazardous substances was observed on the subject property. Small quantities of general maintenance supplies were found to be properly labeled and stored at the time of the assessment with no signs of leaks, stains, or spills. The storage and use of maintenance supplies does not appear to pose a significant threat to the environmental integrity of the subject property at this time.

6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)

No evidence of current or former ASTs or USTs was observed during the site reconnaissance.

6.2.3 Evidence of Releases

No spills, stains, or other indications that a surficial release has occurred at the subject property were observed.

6.2.4 Polychlorinated Biphenyls (PCBs)

Older transformers and other electrical equipment could contain PCBs at a level that subjects them to regulation by the U.S. EPA. PCBs in electrical equipment are controlled by United States Environmental Protection Agency regulations 40 CFR, Part 761. Under the regulations, there are three categories into which electrical equipment can be classified: 1) Less than 50 parts per million (ppm) of PCBs – "*Non-PCB;*"

2) 50 ppm-500 ppm – "*PCB-Contaminated;*" and, 3) Greater than 500 ppm – "*PCB-Containing.*" The manufacture, process, or distribution in commerce or use of any PCB in any manner other than in a totally enclosed manner was prohibited after July 2, 1979.

No potential PCB-containing equipment (transformers, interior transformers, oil-filled switches, hoists, lifts, dock levelers, hydraulic elevators, balers, etc.) was observed on the subject property during Partner's reconnaissance.

6.2.5 Strong, Pungent or Noxious Odors

No strong, pungent, or noxious odors were evident during the site reconnaissance.

6.2.6 Pools of Liquid

No pools of liquid were observed on the subject property during the site reconnaissance.

6.2.7 Drains, Sumps and Clarifiers

No sumps or clarifiers were observed on the subject property during the site reconnaissance.

6.2.8 Pits, Ponds and Lagoons

No pits, ponds or lagoons were observed on the subject property.

6.2.9 Stressed Vegetation

No stressed vegetation was observed on the subject property.

6.2.10 Additional Potential Environmental Hazards

No additional environmental hazards, including landfill activities or radiological hazards, were observed.

6.3 Non-ASTM Services

6.3.1 Asbestos-Containing Materials (ACMs)

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 requires certain construction materials to be presumed to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building that have not been appropriately tested are "presumed asbestos-containing material" (PACM).

The subject property buildings were constructed in 2002. As such, an asbestos evaluation was not required by the Client's scope of services; however, please refer to the table below for observed materials that would be considered suspect ACMs in the event of a thorough survey:

Suspect ACMs			
Suspect ACM	**Location**	**Friable Yes/No**	**Physical Condition**
Drywall Systems	Throughout Building Interior	No	Good
Floor Tiles	Throughout Building Interior	No	Good
Floor Tile Mastic	Throughout Building Interior	No	Good

The limited visual survey consisted of noting observable materials (materials which were readily accessible and visible during the course of the site reconnaissance) that are commonly known to potentially contain asbestos. This activity was not designed to discover all sources of suspect ACM, PACM, or asbestos at the site; or to comply with any regulations and/or laws relative to planned disturbance of building materials such as renovation or demolition, or any other regulatory purpose. Rather, it is intended to give the User an indication if significant (significant due to quantity, accessibility, or condition) potential sources of ACM or PACM are present at the subject property. Additional sampling, assessment, and evaluation will be warranted for any other use.

According to the US EPA, ACM and PACM that is intact and in good condition can, in general, be managed safely in-place under an Operations and Maintenance (O&M) Program until removal is dictated by renovation, demolition, or deteriorating material condition. Prior to any disturbance of the construction materials within this facility, a comprehensive ACM survey is recommended.

6.3.2 Lead-Based Paint (LBP)

Lead is a highly toxic metal that affects virtually every system of the body. LBP is defined as any paint, varnish, stain, or other applied coating that has 1 mg/cm^2 (or 5,000 ug/g or 0.5% by weight) or more of lead. Congress passed the Residential Lead-Based Paint Hazard Reduction Act of 1992, also known as "Title X", to protect families from exposure to lead from paint, dust, and soil. Under Section 1017 of Title X, intact LBP on most walls and ceilings is not considered a "hazard," although the condition of the paint should be monitored and maintained to ensure that it does not become deteriorated. Further, Section 1018 of this law directed the Housing and Urban Development (HUD) and the US EPA to require the disclosure of known information on LBP and LBP hazards before the sale or lease of most housing built before 1978.

It is unlikely that LBP is present in buildings constructed after 1977. Therefore, due to the age of the subject property buildings, it is unlikely that LBP is present.

6.3.3 Radon

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, according to the table below:

EPA Radon Zones		
EPA Zones	**Average Predicted Radon Levels**	**Potential**
Zone 1	Exceed 4.0 pCi/L	Highest
Zone 2	Between 2.0 and 4.0 pCi/L	Moderate
Zone 3	Less than 2.0 pCi/L	Low

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this assessment. Review of the US EPA Map of Radon Zones places the subject property in Zone 2. Based upon the radon zone classification, radon is not considered to be a significant environmental concern.

6.3.4 Lead in Drinking Water

According to available information, a private water well is operated on the subject property. Refer to Section 6.1.5 for further discussion. Water sampling was not conducted to verify water quality.

6.3.5 Mold

Molds are microscopic organisms found virtually everywhere, indoors, and outdoors. Mold will grow and multiply under the right conditions, needing only sufficient moisture (e.g.in the form of very high humidity, condensation, or water from a leaking pipe, etc.) and organic material (e.g., ceiling tile, drywall, paper, or natural fiber carpet padding).

Partner observed accessible, interior areas for the subject property buildings for significant evidence of mold growth with the exceptions detailed in Section 1.5 of this report; however, this ESA should not be used as a mold survey or inspection. Additionally, this limited assessment was not designed to assess all areas of potential mold growth that may be affected by mold growth on the subject property. Rather, it is intended to give the client an indication as to whether or not conspicuous (based on observed areas) mold growth is present at the subject property. This evaluation did not include a review of pipe chases, mechanical systems, or areas behind enclosed walls and ceilings.

No obvious indications of water damage or mold growth were observed during Partner's visual assessment.

6.4 Adjacent Property Reconnaissance

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises.

No items of environmental concern were identified on the adjacent properties during the site assessment, including hazardous substances, petroleum products, ASTs, USTs, evidence of releases, PCBs, strong or noxious odors, pools of liquids, sumps or clarifiers, pits or lagoons, stressed vegetation, or any other potential environmental hazards.

7.0 FINDINGS AND CONCLUSIONS

The subject property is located on the northwest corner of the intersection of N. Menifee Boulevard and Walnut Avenue within a mixed commercial/residential area of Riverside County. Please refer to the table below for further description of the subject property:

Subject Property Data	
Address(es):	25025 Corsica Lane, Menifee, California
Property Use:	Commercial
Land Acreage (Ac):	7.42 Ac
Number of Buildings:	27
Number of Floors:	One and two
Gross Building Area (SF):	154,450
Net Rentable Area (SF):	154,450
Date of Construction:	2004/2018
Assessor's Parcel Number (APN):	305030050 and 305030055
Type of Construction:	Metal and wood framed
Current Tenants:	APN 330-180-029
Site Assessment Performed By:	Jeremy Russell of Partner
Site Assessment Conducted On:	October 4, 2021

The subject property is currently occupied by APN 330-180-029 for commercial use. Onsite operations consist of 1,037 self-storage units in 27 buildings. The two-story building on the southeast corner of the subject property is used for rental operations and a two-story residential apartment for the onsite manager. In addition to the current structures, the subject property is also improved with concrete-paved driveways and parking areas, storm water drains, and minimal landscaping. One of the storage units is used for onsite storage of maintenance equipment and supplies. Small quantities of hazardous substances including spray lubricants, paint thinner, etc. were observed stored in a flammable materials cabinet.

According to available historical sources, the subject property was formerly undeveloped as early as 1901; developed for agricultural uses between 1938 and circa 2004; and redeveloped with the current improvements in 2004 and expanded with additional structures in 2018. Tenants on the subject property have included self-storage businesses (2004-present).

The immediately surrounding properties consist of commercial properties to the north; commercial properties to the south across Walnut Avenue; residential properties to the east across N. Menifee Boulevard; and commercial properties to the west.

According to a previous subsurface investigation conducted on a nearby property (SUNNYEDGE DISPOSAL, 2750 N. Menifee Boulevard and Case #T0606500303), the depth of groundwater in the vicinity of the subject property was reported to be approximately 163 feet below ground surface (bgs).

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- The subject property parcel was historically used for agricultural purposes. There is a potential that agricultural related chemicals such as pesticides, herbicides, and fertilizers, may have been used and stored onsite. The subject property is either paved over or covered by building structures that minimize direct contact to any potential remaining concentrations in the soil. Additionally, during previous site development activities, near surface soils (where residual agricultural chemical concentrations would have most likely been present, if at all) were likely mixed with fill material or disturbed during grading. Also, it is common that engineered fill material is placed over underlying soils as part of the development activities. These additional variables serve to further reduce the potential for exposure to residual agricultural chemicals (if any). Based on these reasons, Partner concludes that the possible former use of agricultural chemicals is not expected to represent a significant environmental concern at this time.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of 25025 Corsica Lane in Menifee, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions or environmental issues in connection with the subject property. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment of the property located at 25025 Corsica Lane in Menifee, Riverside County, California in conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312. Partner has the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. Partner has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:

DRAFT

Jeremy Russell
Environmental Professional

Reviewed By:

DRAFT

Sonny Bettelyoun
Senior Author

9.0 REFERENCES

Reference Documents

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation: E1527-13.

Environmental Data Resources (EDR), Radius Report, October 2021

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, accessed via internet, October 2021

United States Department of Agriculture, Natural Resources Conservation Service, accessed via internet, October 2021

United States Department of Agriculture, Natural Resources Conservation Service, Web Soil Survey, accessed via the internet, October 2021

United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the internet, October 2021

United States Geological Survey, accessed via the Internet, October 2021

United States Geological Survey Topographic Map 2012, 7.5-minute series, accessed via internet, October 2021

FIGURES

1 SITE LOCATION MAP

2 SITE PLAN

3 TOPOGRAPHIC MAP



N

Drawing Not To Scale

KEY:
Subject Property

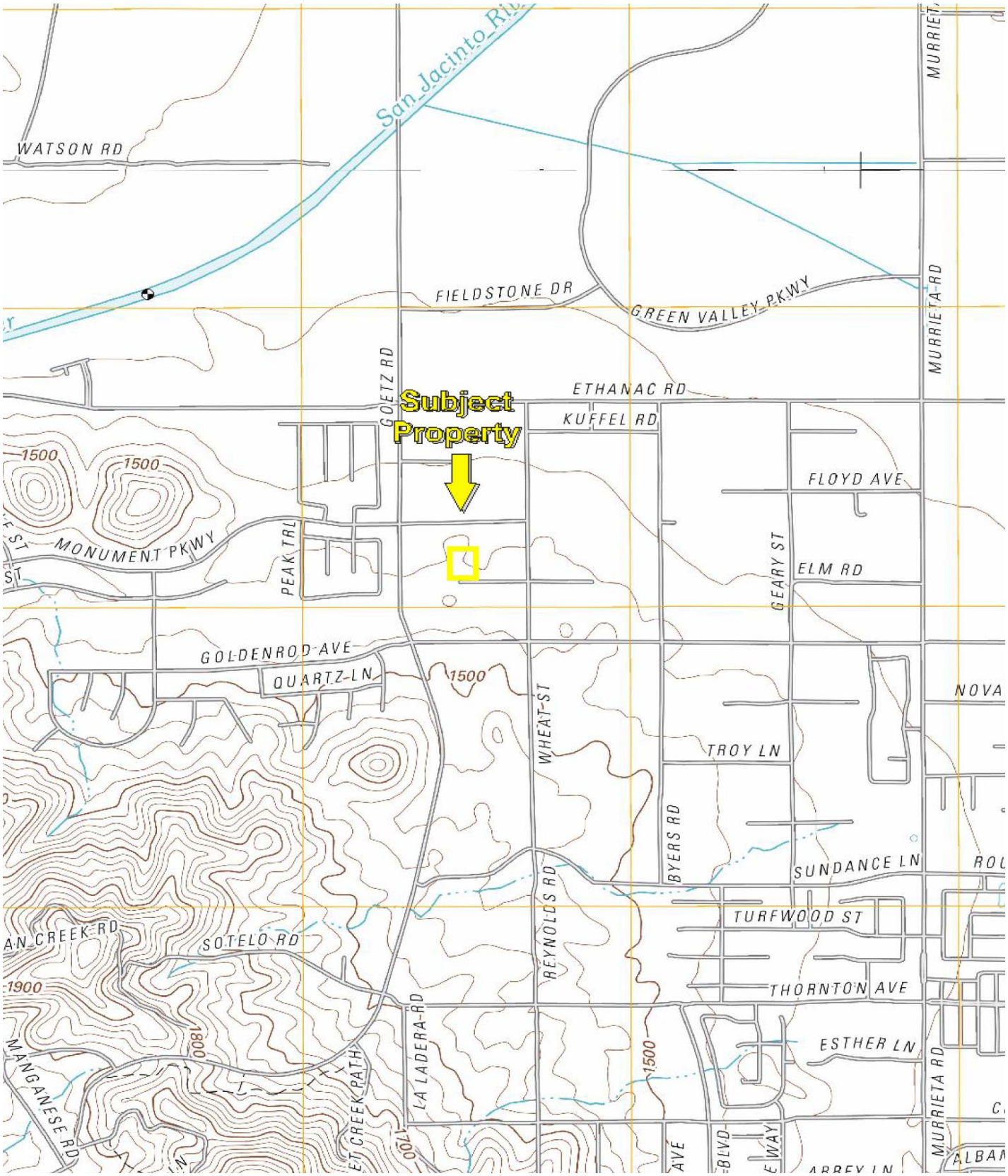
FIGURE 1: SITE LOCATION MAP
Project No. 21-335922.1

PARTNER



FIGURE 2: SITE PLAN
Project No. 21-335922.1

PARTNER



N

USGS 7.5 Minute *Romoland, CA* Quadrangle
Created: 2012

KEY:
Subject Property

FIGURE 3: TOPOGRAPHIC MAP
Project No. 21-335922.1

PARTNER

APPENDIX A: SITE PHOTOGRAPHS



1. Looking west across south side of the subject property.



2. View of the dwelling on the subject property.



3. View of water well on the southeast corner of the subject property.



4. Water well tag.



5. View of northeast corner of the subject property.



6. Looking west along north side of the subject property.



7. Storage sheds.



8. Storage sheds.



9. Horse corral.



10. Looking south from the north side of the subject property.



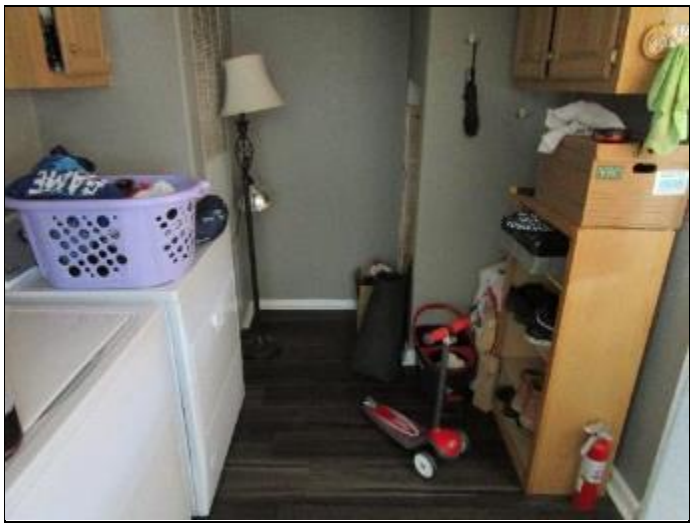
11. Area of septic tank.



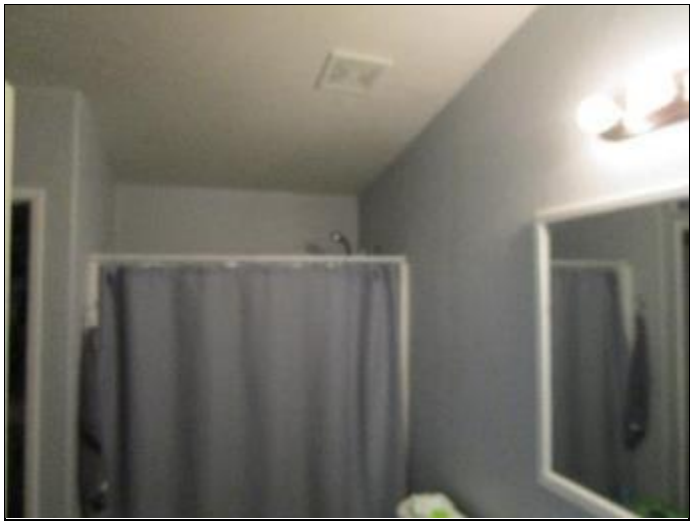
12. View of porch on north side of dwelling.



13. Living room.



14. Laundry room.



15. Bathroom.



16. Bedroom.



17. Property adjacent north.



18. Property adjacent northeast.



19. Property adjacent east.



20. Property adjacent south.



21. Property adjacent south.



22. Property adjacent west.

APPENDIX B: HISTORICAL/REGULATORY DOCUMENTATION

APN 330-180-029

25025 Corsica Lane

Sun City, CA 92585

Inquiry Number: 6685622.8

September 30, 2021

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

09/30/21

Site Name:

APN 330-180-029
25025 Corsica Lane
Sun City, CA 92585
EDR Inquiry # 6685622.8

Client Name:

Partner Engineering and Science, Inc.
2154 Torrance Blvd, Suite 200
Torrance, CA 90501-0000
Contact: Roy Zamarripa

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Search Results:

Year	*Scale*	*Details*	*Source*
1938	1"=500'	Flight Date: June 14, 1938	USDA
1949	1"=500'	Flight Date: May 08, 1949	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1961	1"=500'	Flight Date: June 14, 1961	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1974	1"=500'	Flight Date: November 06, 1974	USGS
1978	1"=500'	Flight Date: September 20, 1978	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1989	1"=500'	Flight Date: August 15, 1989	USDA
1994	1"=500'	Flight Date: June 01, 1994	USGS
1997	1"=500'	Acquisition Date: January 01, 1997	USGS/DOQQ
2002	1"=500'	Acquisition Date: January 01, 2002	USGS/DOQQ
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2016	1"=500'	Flight Year: 2016	USDA/NAIP

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500 1000 2000

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Key: Subject Property



500 1000 2000

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Key: Subject Property



500 1000 2000

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Key: Subject Property



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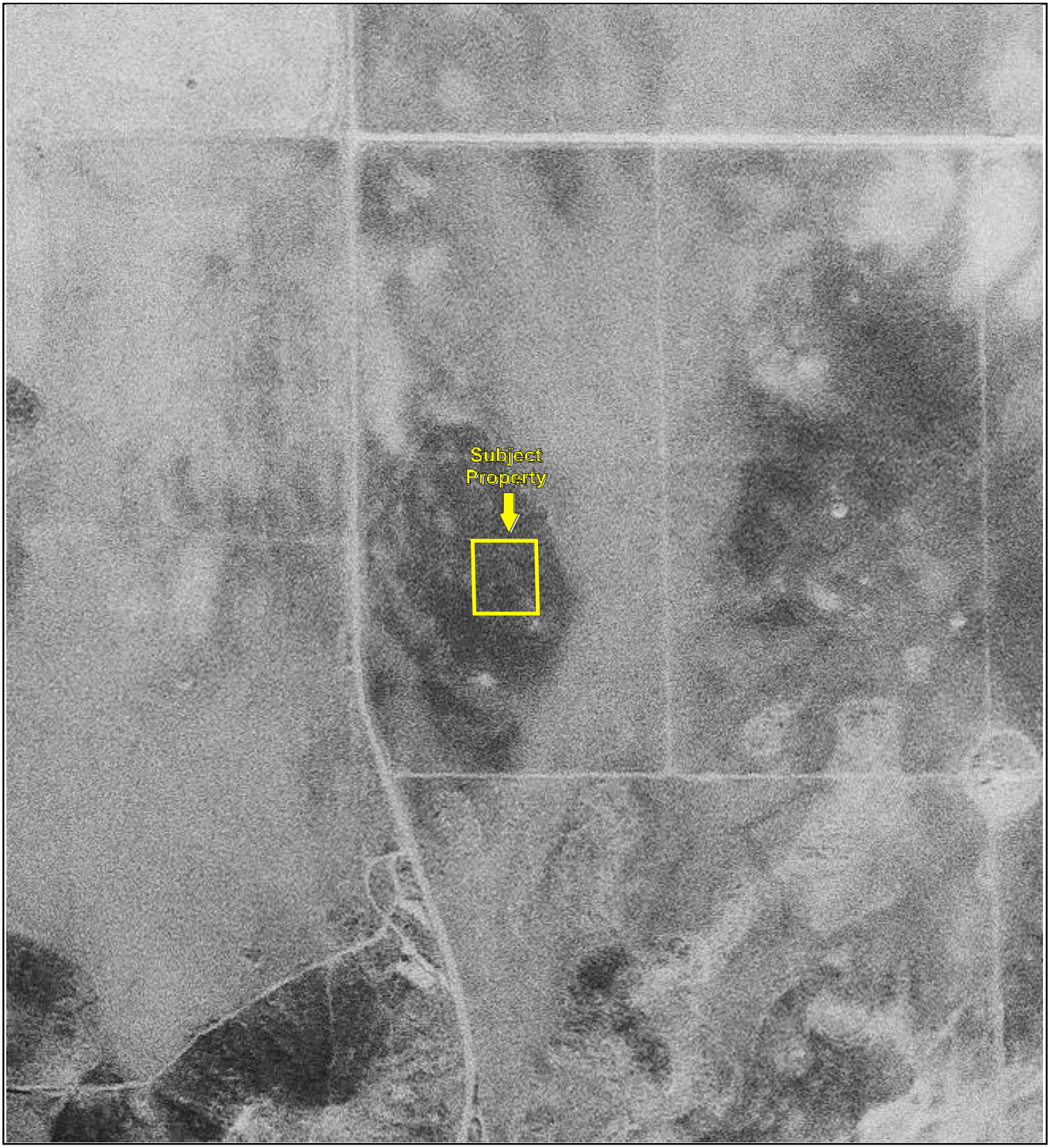
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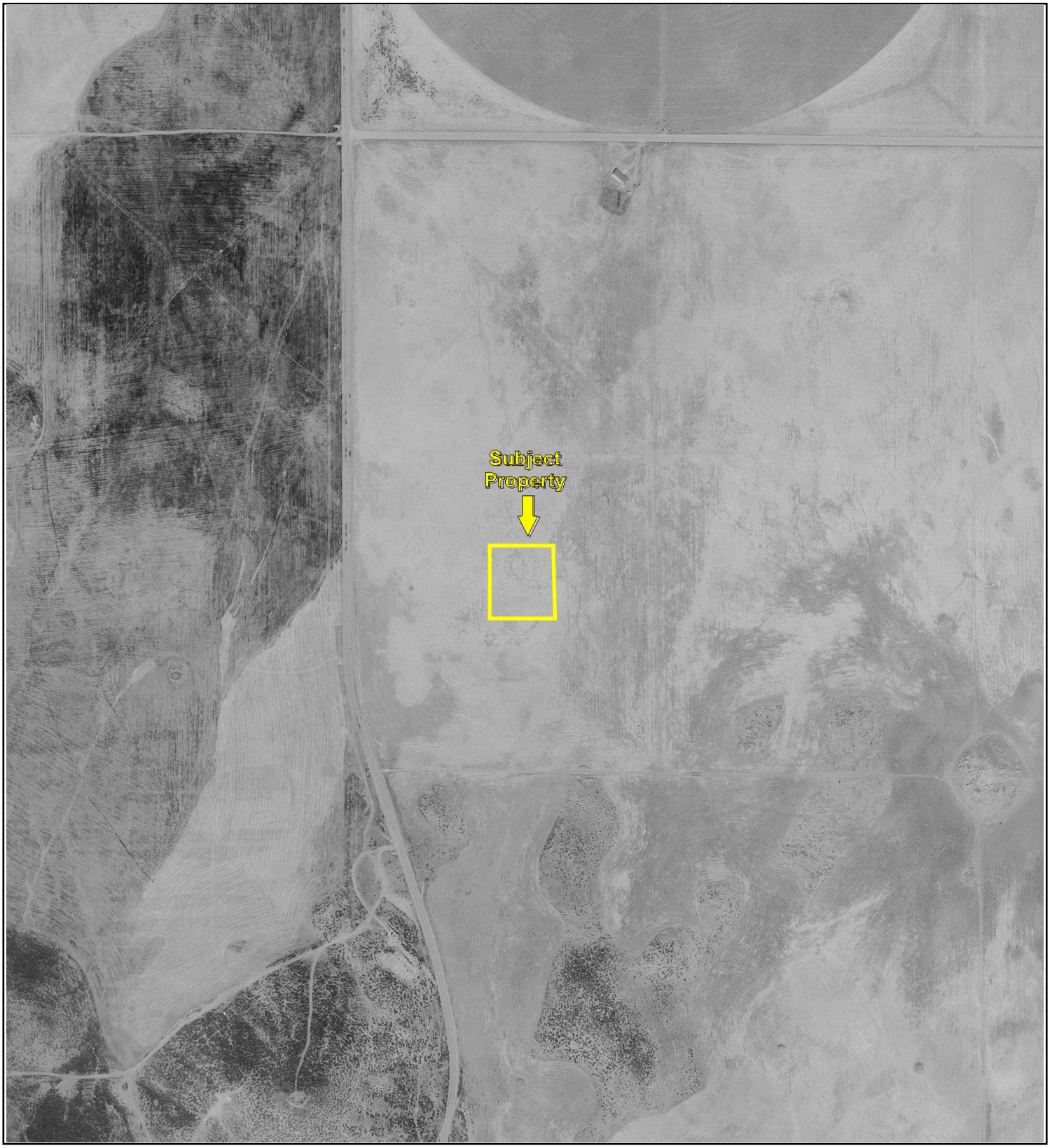
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Key: Subject Property



500 1000 2000

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Key: Subject Property

APN 330-180-029
25025 Corsica Lane
Sun City, CA 92585

Inquiry Number: 6685622.5
October 05, 2021

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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City Directory Images

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EXECUTIVE SUMMARY

DESCRIPTION

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RECORD SOURCES

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The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☑	☑	EDR Digital Archive
2014	☑	☑	EDR Digital Archive
2010	☑	☑	EDR Digital Archive
2005	☑	☑	EDR Digital Archive
2000	☐	☐	Haines Criss-Cross Directory
1995	☐	☐	Haines Criss-Cross Directory
1990	☐	☐	Haines Criss-Cross Directory
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1976	☐	☐	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

25025 Corsica Lane
Sun City, CA 92585

Year	*CD Image*	*Source*	
CORSICA LN			
2017	pg A2	EDR Digital Archive	
2014	pg A4	EDR Digital Archive	
2010	pg A6	EDR Digital Archive	
2005	pg A8	EDR Digital Archive	
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
AARON ALAN DR			
2017	pg. A1	EDR Digital Archive	
2014	pg. A3	EDR Digital Archive	
2010	pg. A5	EDR Digital Archive	
2005	pg. A7	EDR Digital Archive	
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

AARON ALAN DR 2017

25151 CARREON, RAMON R

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CORSICA LN 2017

25025 MACPHERSON, KENNETH R
25151 CARMICHAEL, NORMAN L
26342 SAVOIA, ROBERT

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

AARON ALAN DR 2014

25075 OCCUPANT UNKNOWN,
25151 CARREON, RAMON R
25221 GONZALEZ, JUAN
25233 ESPINOZA, REYNALDO

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CORSICA LN 2014

25025 MACPHERSON, KENNETH R
25151 CARMICHAEL, NORMAN L
25232 MAGANA, MARILYN
26342 SAVOIA, ROBERT

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

AARON ALAN DR 2010

25075 OCCUPANT UNKNOWN,
25151 CARREON, VICTOR C
25221 GONZALEZ, JUAN

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CORSICA LN 2010

25025 MACPHERSON, KENNETH R
25151 CARMICHAEL, NORMAN L
26342 OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

AARON ALAN DR 2005

25221 ALATORRE, FRANCISCO J

Target Street	Cross Street	Source
✓	-	EDR Digital Archive

CORSICA LN 2005

25025 OCCUPANT UNKNOWN,
25151 CARMICHAEL, NORMAN L

APN 330-180-029

25025 Corsica Lane

Sun City, CA 92585

Inquiry Number: 6685622.3

September 30, 2021

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Certified Sanborn® Map Report

09/30/21

Site Name:

APN 330-180-029
25025 Corsica Lane
Sun City, CA 92585
EDR Inquiry # 6685622.3

Client Name:

Partner Engineering and Science, Inc.
2154 Torrance Blvd, Suite 200
Torrance, CA 90501-0000
Contact: Roy Zamarripa

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by Partner Engineering and Science, Inc. 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.

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Certified Sanborn Results:

Certification # 08E8-48D2-B8BC

PO # 21-335922.1

Project 21-335922.1

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Sanborn® Library search results

Certification #: 08E8-48D2-B8BC

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- ☑ Library of Congress
- ☑ University Publications of America
- ☑ EDR Private Collection

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APN 330-180-029

25025 Corsica Lane

Sun City, CA 92585

Inquiry Number: 6685622.4

September 30, 2021

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

09/30/21

Site Name:

APN 330-180-029
25025 Corsica Lane
Sun City, CA 92585
EDR Inquiry # 6685622.4

Client Name:

Partner Engineering and Science, Inc.
2154 Torrance Blvd, Suite 200
Torrance, CA 90501-0000
Contact: Roy Zamarripa

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Partner Engineering and Science, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 21-335922.1
Project: 21-335922.1

Coordinates:

Latitude:	33.738093 33° 44' 17" North
Longitude:	-117.221075 -117° 13' 16" West
UTM Zone:	Zone 11 North
UTM X Meters:	479521.74
UTM Y Meters:	3733138.81
Elevation:	1459.40' above sea level

Maps Provided:

1901
1942
1943
1947
1953
1973
1979
2012

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1901 Source Sheets



Elsinore
1901
30-minute, 125000

1942 Source Sheets



Perris
1942
15-minute, 62500
Aerial Photo Revised 1939



Murrieta
1942
15-minute, 62500
Aerial Photo Revised 1939

1943 Source Sheets

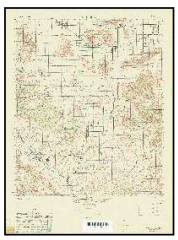


PERRIS
1943
15-minute, 62500



Murrieta
1943
15-minute, 62500
Aerial Photo Revised 1939

1947 Source Sheets

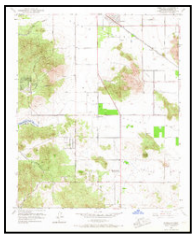


MURRIETA
1947
15-minute, 50000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1953 Source Sheets

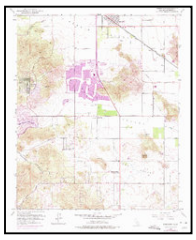


Romoland
1953
7.5-minute, 24000
Aerial Photo Revised 1951



Perris
1953
7.5-minute, 24000
Aerial Photo Revised 1951

1973 Source Sheets



Romoland
1973
7.5-minute, 24000
Aerial Photo Revised 1973



Perris
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1979 Source Sheets

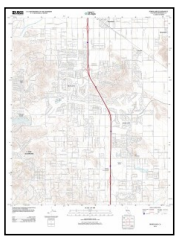


Romoland
1979
7.5-minute, 24000
Aerial Photo Revised 1976



Perris
1979
7.5-minute, 24000
Aerial Photo Revised 1978

2012 Source Sheets



Romoland
2012
7.5-minute, 24000



Perris
2012
7.5-minute, 24000

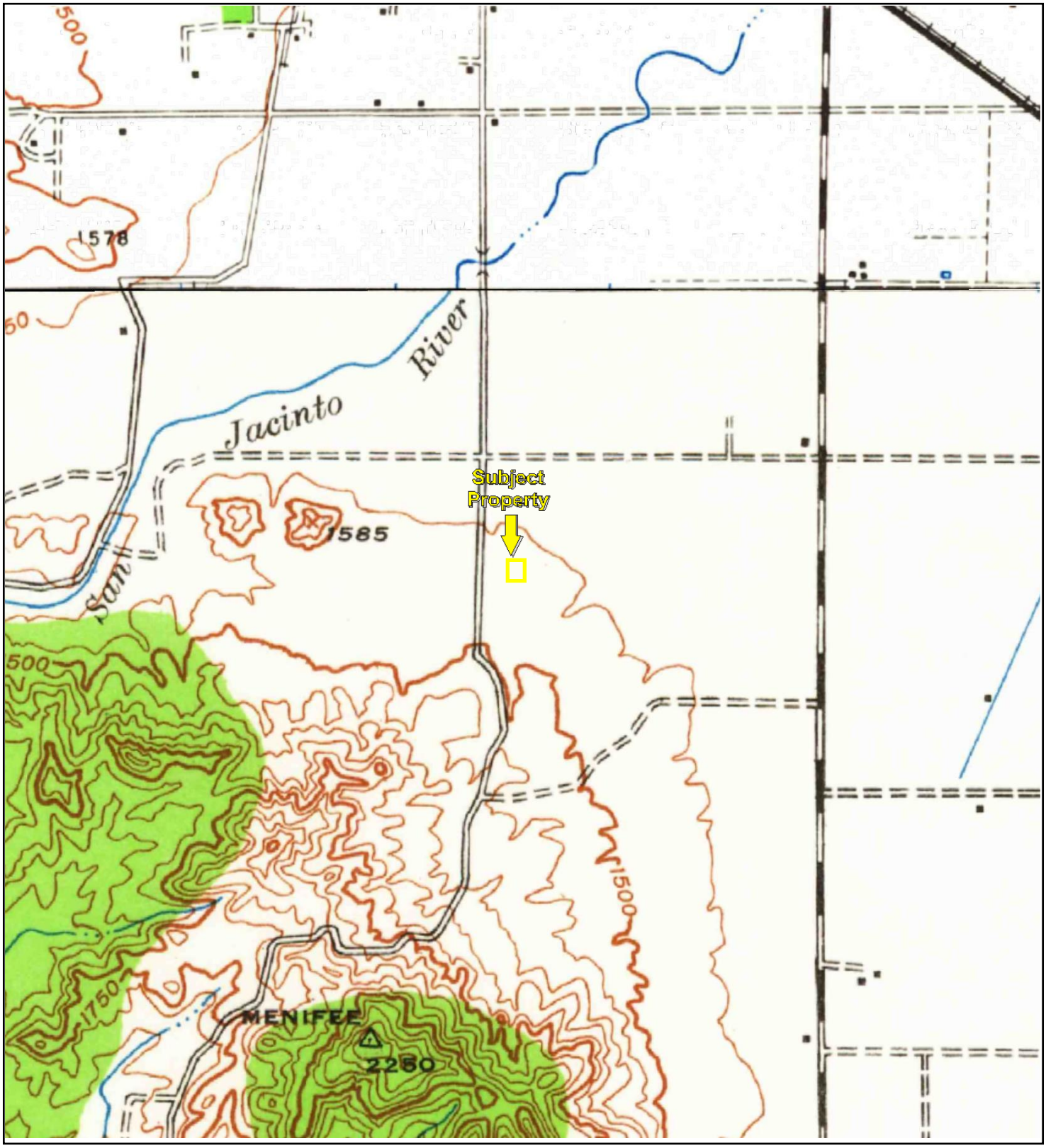


TP, Elsinore, 1901, 30-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

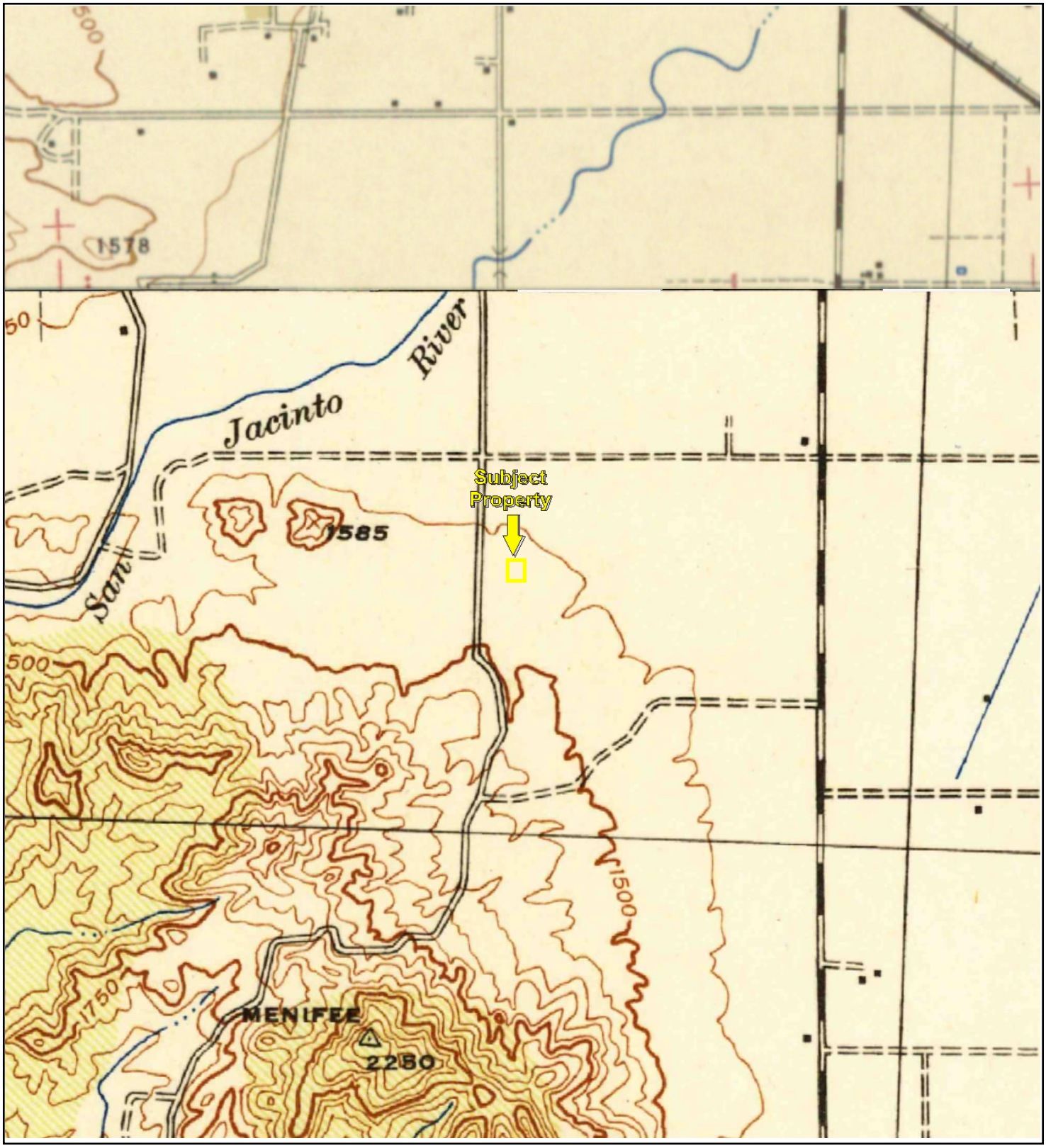


TP, Murrieta, 1942, 15-minute
NE, Perris, 1942, 15-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property



TP, Murrieta, 1943, 15-minute
NE, PERRIS, 1943, 15-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

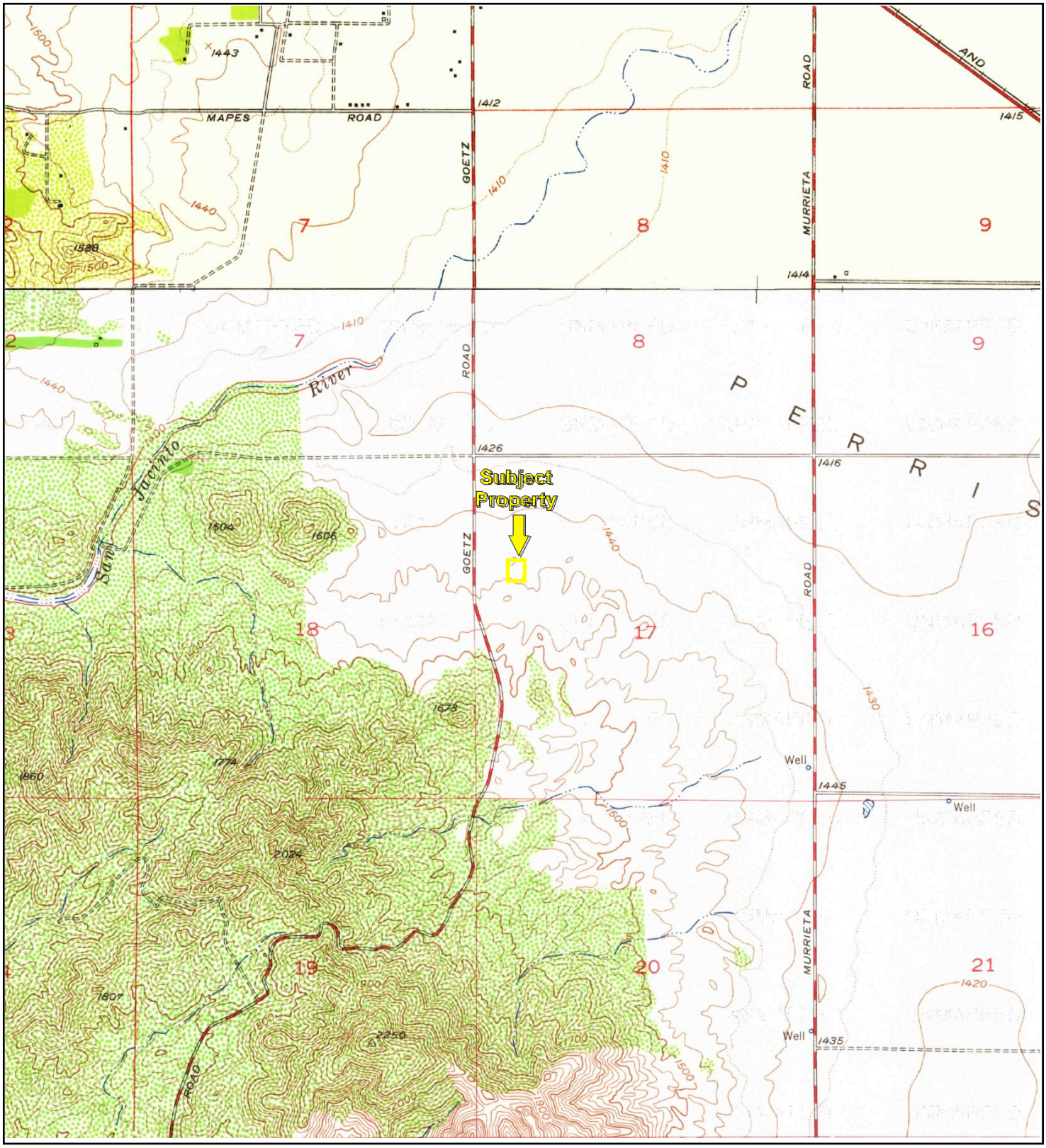


TP, MURRIETA, 1947, 15-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

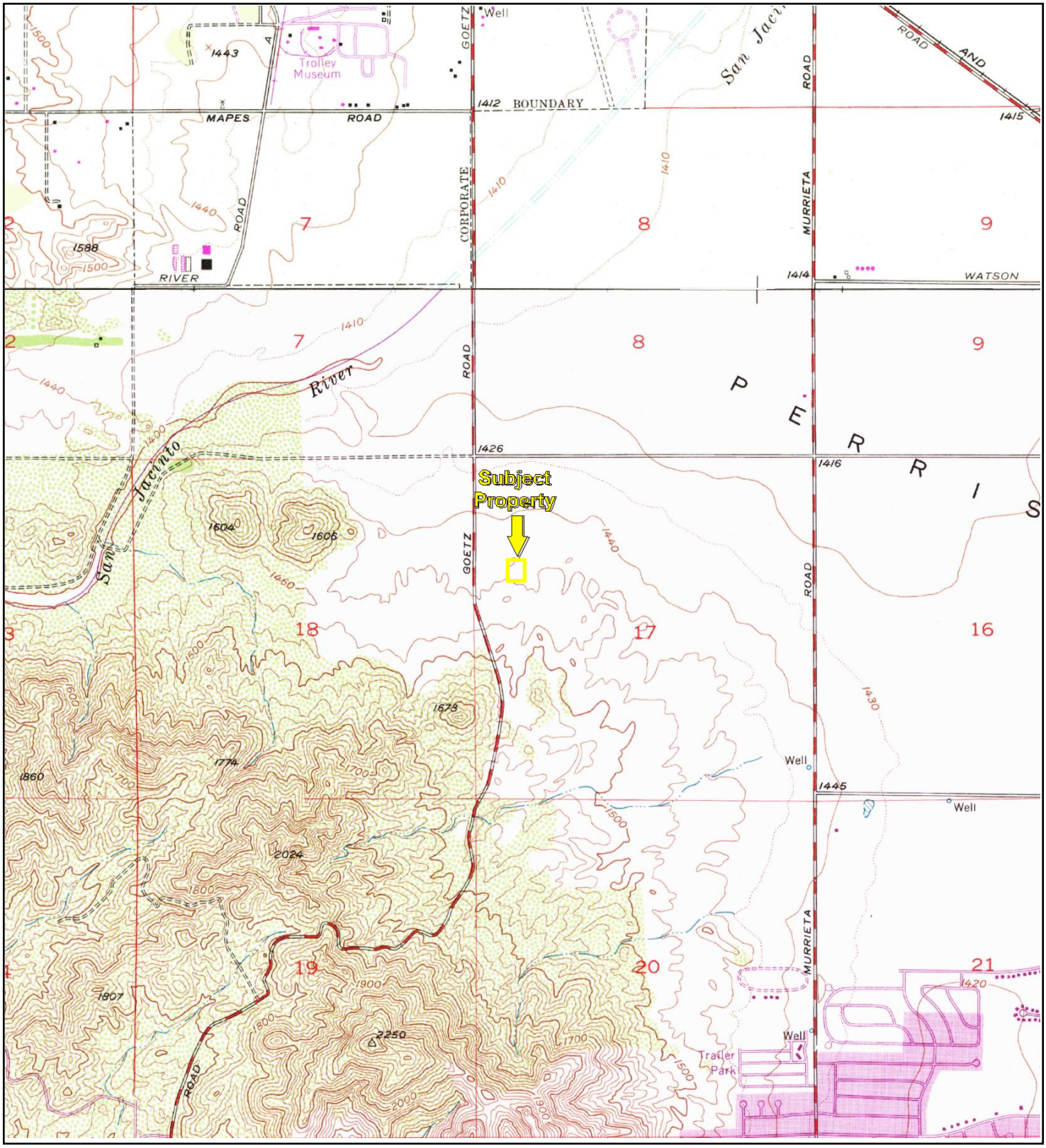


TP, Romoland, 1953, 7.5-minute
N, Perris, 1953, 7.5-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property



TP, Romoland, 1973, 7.5-minute
N, Perris, 1973, 7.5-minute

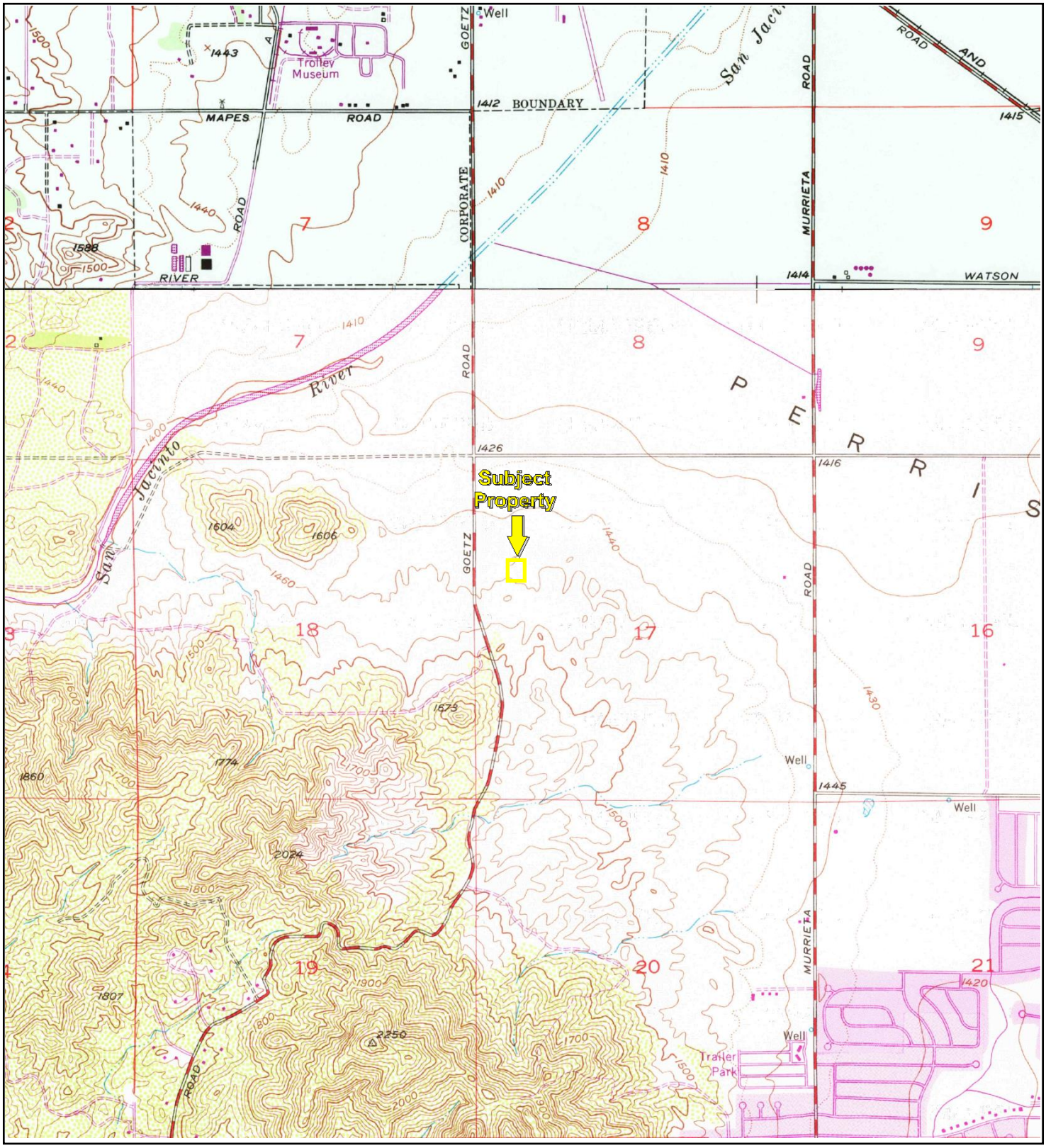
0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1



TP, Romoland, 1979, 7.5-minute
N, Perris, 1979, 7.5-minute

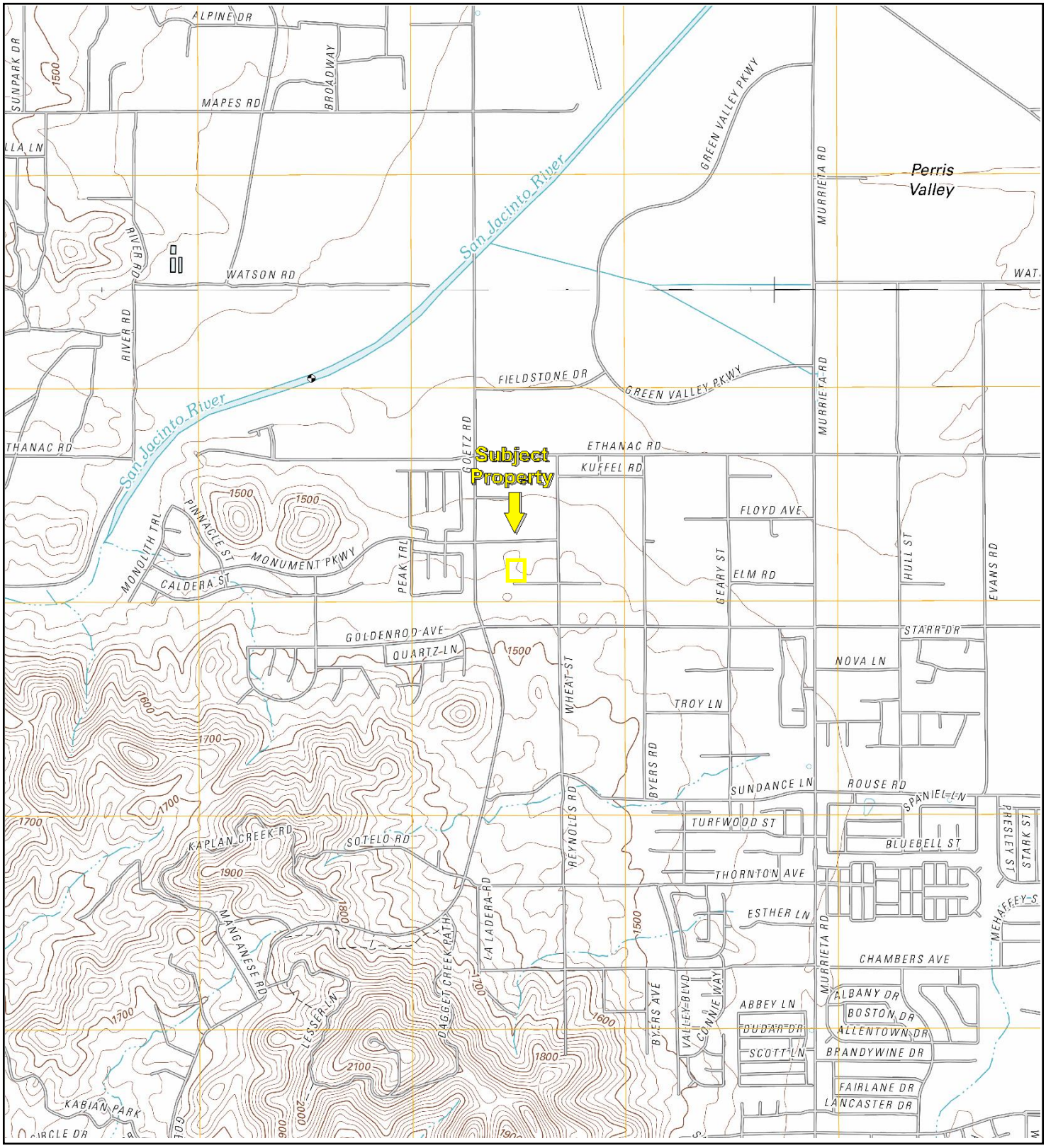
0 Miles 0.25 0.5 1 1.5

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

PARTNER



TP, Romoland, 2012, 7.5-minute
N, Perris, 2012, 7.5-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

PARTNER

RIVERSIDE COUNTY
VISIT US AT: www.CountyofRiverside.us

Choose a department . . .



PERMITS ATTACHED TO APN 330180029 Online Services

Results for 330180029 as of 9/30/2021 4:14:18 PM

CASE/PERMIT	DESCRIPTION	ADDRESS
BMR021150	SITE PREP	25025 CORSICA LN SUN CITY
BMR021151	MOBILEHOME INSTALLATION	25025 CORSICA LN SUN CITY
BMR021152	PERMANENT FOUNDATION FOR MOBILEHOME SPA 11-14F	25025 CORSICA LN SUN CITY
MT021747	PM14619 LOT 1	25025 CORSICA LN SUN CITY
MT021753	PM14619 LOT 1	25025 CORSICA LN SUN CITY
MT022343	PM14619 LOT1	25025 CORSICA LN SUN CITY

Search with another APN

9 Digit APN #:
(e.g. 111222333)
Submit Clear Form

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Hours of Operations: 8:00 am to 5:00 pm
Monday through Friday

TLMA Phone: (951) 955-4608

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BUILDING PERMIT INFORMATION FOR BMR021151 Online Services

Results for BMR021151 as of 10/5/2021 12:23:52 PM

Basic Case Information

PERMIT NUMBER:	BMR021151
PERMIT STATUS:	Final
APPLIED DATE:	05/14/2002
ISSUED DATE:	07/12/2002
CLOSED DATE:	08/16/2002

EXPIRATION DATE:	
DESCRIPTION:	MOBILEHOME INSTALLATION
TYPE DESCRIPTION:	MHR - Manufactured Home Residential
SITUS CITY:	SUN CITY
SITUS:	CORSICA LN 25025
GENERAL LOCATION:	TG837 H2
APN:	330180029 **Click to view in Map My County**
APPLICANT:	Robertson Rae
ADDRESS 1:	409 Thornton
ADDRESS 2:	Hemet CA
ADDRESS 3:	
ZIP:	92543

Fee Information

TOTAL FEES	$121.80
TOTAL PAYMENTS:	$121.80
BALANCE DUE:	$0.00

Valuation Information

SQUARE FEET:	
VALUATION:	

Search Another Building Permit

Enter Permit Number:

Submit Clear Form

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TLMA Phone: (951) 955-4608

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Jared Blumenfeld
Secretary for
Environmental Protection

Department of Toxic Substances Control

Meredith Williams, Ph.D., Director
1001 "I" Street
P.O. Box 806
Sacramento, California 95812-0806

Gavin Newsom
Governor

Facility Search Results

Selection Criteria:

Facility:	
Search on:	Physical Address
Street:	25025 corsica
Zip:	92585
Status:	Active and Inactive
Sort Direction:	asc
Sorted By:	EPA ID
Records Found:	0

The Department of Toxics Substances Control (DTSC) takes every precaution to ensure the accuracy of data in the Hazardous Waste Tracking System (HWTS). However, because of the large number of manifests handled, inaccuracies in the submitted data, limitations of the manifest system and the technical limitations of the database, DTSC cannot guarantee that the data accurately reflect what was actually transported or produced.

Report Generation Date: 10/05/2021

County of Riverside
DEPARTMENT OF ENVIRONMENTAL HEALTH

www.rivcoeh.org

REQUEST FOR RECORDS

To help expedite your request, mark the program for which you are requesting records (Call 951-358-5172 if you are uncertain):

☐ Hazardous Materials / Underground Storage Tanks

☒ Land Use / Water Resources / Body Art / Medical Waste / Solid Waste

☐ Food facility / Public Pools and Water Features / Retail Tobacco

- Requests will be responded to within ten (10) business days per California Government Code, sections 6253 and 6256.
- Pursuant to California Government Code section 6254 (f), records of pending investigations and informants' names, addresses, and telephone numbers will not be released.
- **This form is for acquisition of any existing records. Any consultation in reference to these records may be subject to a consultation fee (pursuant to Riverside County Ordinance 640).**
- For access to electronic records available online, visit the public information section at www.rivcoeh.org for more details.

NAME OF REQUESTING PARTY: Jeremy Russell	DATE OF REQUEST: 10/4/2021	
BUSINESS NAME (IF ANY): Partner Engineering	TELEPHONE NUMBER: ( ) (949) 678-8911	
RETURN LEGAL MAILING ADDRESS:	EMAIL ADDRESS: jeremy.russell@protonmail.com	
CITY: Torrance	STATE: CA	ZIP: 90503

The following information is required. **List each street address separately.**

INFORMATION REQUESTED: Water well and septic records	PERIOD OF TIME TO BE RESEARCHED (If applicable)	
	FROM: 2000	TO: Present
SITE STREET ADDRESS (1): 25025 Corsica Lane/APN 330180029	CITY: Sun City/Menifee	
SITE STREET ADDRESS (2):	CITY:	
SITE STREET ADDRESS (3):	CITY:	
SITE STREET ADDRESS (4):	CITY:	
SITE STREET ADDRESS (5):	CITY:	
SITE STREET ADDRESS (6):	CITY:	
APN (**For Land Use and Water Resources ONLY**):		

Email this completed form to:

Land Use/Water Resources (WEST): landuse@rivco.org
Land Use/Water Resources (DESERT): landusedesert@rivco.org
Hazardous Materials: DEHRecordsMgmt@rivco.org
All other programs: dehwebmaster@rivco.org

To mail this form, go to http://rivcoeh.org/Contactus for the address of the DEH office closest to the requested location(s).

Duplication costs for records researched and duplicated must be paid upon receipt of records.

FOR OFFICE USE ONLY		
COST OF REPRODUCTION: $_____	EACH ADDITIONAL PAGE: $_____	TOTAL: $_____
REVIEWED BY	TITLE	
RECORDS RECEIVED BY	DATE	

*** IF RECORD REQUEST IS MADE USING ALTERNATE METHOD AND NOT THIS FORM, ATTACH A COPY OF REQUEST TO THIS FORM.**

For our office locations call us at (888) 722-4234 or visit our website at www.rivcoeh.org

Assessor - County Clerk - Recorder
Riverside County, CA

Property Detail

25025 CORSICA LN MENIFEE CA 92585

Assessment No.	330180029
APN	330180029
Property Type	MH on Foundation (MF)
Neighborhood	RM2500
Acreage	1.82

Legal Description

1.82 ACRES NET IN PAR 1 PM 086/031 PM 14619 SubdivisionName PM 14619 Acres 001.82 NET LotType Parcel Parcel 1 RecMapType Parcel Map MapPlatB 086 MapPlatP 031 ManufName GOLDENWEST Year 2002 SerialNumber GOCA21L29633A DecalNumber 8691651 HCD 364578 SerialNumber GOCA21L29633B HCD 364579

Value History (Part 1)

Year	Reason Date	Market Value				Factored Base Year Value			
		Land	Improvement	Living Improvement	Total	Land	Improvement	Living Improvement	Total
2017	Other 01/01/2017	$93,000	$101,000		$194,000	$141,465	$152,783		$294,248
2017	Other 14/07/2017	$117,600	$218,400		$336,000				
2018	Other 01/01/2018					$117,600	$218,400		$336,000
2019	01/01/2019					$119,952	$222,768		$342,720
2020	01/01/2020					$122,351	$227,223		$349,574
2021	01/01/2021					$123,618	$229,577		$353,195

Value History (Part 2)

Year	Restricted Value				Assessed Value				Penalty	Exemption	Net Taxable Value
	Land	Improvement	Living Improvement	Total	Land	Improvement	Living Improvement	Total			
2017					$93,000	$101,000		$194,000			$194,000
2017					$24,600	$117,400		$142,000			$142,000
2018					$117,600	$218,400		$336,000			$336,000
2019					$119,952	$222,768		$342,720			$342,720
2020					$122,351	$227,223		$349,574			$349,574
2021					$123,618	$229,577		$353,195			$353,195

Transfer History

Doc #	Sales Price	Date	Vacant Land
2021-0219132	$465,000	4/7/2021	False
2017-0289049	$336,000	7/14/2017	False
2009-0617190	$0	12/1/2009	False
2008-0191495	$262,500	4/17/2008	False
2002-0507633	$0	9/12/2002	False
2002-0248351	$39,000	5/10/2002	False
2002-0063328	$0	2/4/2002	False
1988-0025563	$29,000	1/29/1988	False
1982-0106496	$0	6/22/1982	False
1980-0237771	$0	12/19/1980	False
1980-0237771	$0	12/19/1980	False

Features

Code	Code Descr.	Year	Building	Size	Size Descr.	Units	Cond. Details	Percent
MISC STRUCT RCN	Miscellaneous Structure (RCN) [R]	0	330180029	5000.00	Replacement Cost New	N/A	0.00 Average	100.00

Land Details

Primary Use	Land Type	Acres	Eff. Frontage	Eff. Depth
Manufactured Home	LandLine 01 / 330180029 / Manufactured Home	1.82	0.00	0.00

Building 1 - Building Details

Address 25025 CORSICA LN
Type MH on Foundation (MF)
Year Built 2002

Image: Sketch Image

Structural Elements

Use	Detail
Basement	No Basement
Bathroom Condition	Average
Central Cooling	Yes
Central Heating	Yes
Kitchen Condition	Average
Roof Cover	Rock/Composite

Floor Areas

Description	Level	Gross Area	Finished Area	Construction Type
Main Dwelling - MH	Ground	1782.00	1782.00	Wood or Light Steel (D)

Unit Counts

Units/Costs	Category	Description
8	Bath Fixtures	Bathroom Fixtures
5346	Building Additive	Heat and Cooling (Cost)
2	MH Number of Units	Total MH Units
3	Room Count	Bedroom
1	Room Count	Dining Room
1	Room Count	Family Room / Den
2	Room Count	Bath - Full
1	Room Count	Kitchen
1	Room Count	Living Room
1	Room Count	Utility Room

Riverside County is not liable for erroneous or incomplete data.
California Revenue and Taxation Code Sec. 408.3 (d)

Date Printed: 9/30/2021

First American	ALTA Commitment for Title Insurance
Commitment	ISSUED BY **First American Title Insurance Company** File No: NCS-1057922-B-SA1

COMMITMENT FOR TITLE INSURANCE

Issued By

FIRST AMERICAN TITLE INSURANCE COMPANY

NOTICE

IMPORTANT-READ CAREFULLY: THIS COMMITMENT IS AN OFFER TO ISSUE ONE OR MORE TITLE INSURANCE POLICIES. ALL CLAIMS OR REMEDIES SOUGHT AGAINST THE COMPANY INVOLVING THE CONTENT OF THIS COMMITMENT OR THE POLICY MUST BE BASED SOLELY IN CONTRACT.

THIS COMMITMENT IS NOT AN ABSTRACT OF TITLE, REPORT OF THE CONDITION OF TITLE, LEGAL OPINION, OPINION OF TITLE, OR OTHER REPRESENTATION OF THE STATUS OF TITLE. THE PROCEDURES USED BY THE COMPANY TO DETERMINE INSURABILITY OF THE TITLE, INCLUDING ANY SEARCH AND EXAMINATION, ARE PROPRIETARY TO THE COMPANY, WERE PERFORMED SOLELY FOR THE BENEFIT OF THE COMPANY, AND CREATE NO EXTRACONTRACTUAL LIABILITY TO ANY PERSON, INCLUDING A PROPOSED INSURED.

THE COMPANY'S OBLIGATION UNDER THIS COMMITMENT IS TO ISSUE A POLICY TO A PROPOSED INSURED IDENTIFIED IN SCHEDULE A IN ACCORDANCE WITH THE TERMS AND PROVISIONS OF THIS COMMITMENT. THE COMPANY HAS NO LIABILITY OR OBLIGATION INVOLVING THE CONTENT OF THIS COMMITMENT TO ANY OTHER PERSON.

COMMITMENT TO ISSUE POLICY

Subject to the Notice; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions; and the Commitment Conditions, ***First American Title Insurance Company***, a Nebraska Corporation (the "Company"), commits to issue the Policy according to the terms and provisions of this Commitment. This Commitment is effective as of the Commitment Date shown in Schedule A for each Policy described in Schedule A, only when the Company has entered in Schedule A both the specified dollar amount as the Proposed Policy Amount and the name of the Proposed Insured.

If all of the Schedule B, Part I-Requirements have not been met within six months after the Commitment Date, this Commitment terminates and the Company's liability and obligation end.

First American Title Insurance Company

Dennis J. Gilmore, President

Greg L. Smith, Secretary

If this jacket was created electronically, it constitutes an original document.

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions.

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COMMITMENT CONDITIONS

1. DEFINITIONS

(a) "Knowledge" or "Known": Actual or imputed knowledge, but not constructive notice imparted by the Public Records.
(b) "Land": The land described in Schedule A and affixed improvements that by law constitute real property. The term "Land" does not include any property beyond the lines of the area described in Schedule A, nor any right, title, interest, estate, or easement in abutting streets, roads, avenues, alleys, lanes, ways, or waterways, but this does not modify or limit the extent that a right of access to and from the Land is to be insured by the Policy.
(c) "Mortgage": A mortgage, deed of trust, or other security instrument, including one evidenced by electronic means authorized by law.
(d) "Policy": Each contract of title insurance, in a form adopted by the American Land Title Association, issued or to be issued by the Company pursuant to this Commitment.
(e) "Proposed Insured": Each person identified in Schedule A as the Proposed Insured of each Policy to be issued pursuant to this Commitment.
(f) "Proposed Policy Amount": Each dollar amount specified in Schedule A as the Proposed Policy Amount of each Policy to be issued pursuant to this Commitment.
(g) "Public Records": Records established under state statutes at the Commitment Date for the purpose of imparting constructive notice of matters relating to real property to purchasers for value and without Knowledge.
(h) "Title": The estate or interest described in Schedule A.

2. If all of the Schedule B, Part I—Requirements have not been met within the time period specified in the Commitment to Issue Policy, this Commitment terminates and the Company's liability and obligation end.

3. The Company's liability and obligation is limited by and this Commitment is not valid without:
(a) the Notice;
(b) the Commitment to Issue Policy;
(c) the Commitment Conditions;
(d) Schedule A;
(e) Schedule B, Part I—Requirements; and
(f) Schedule B, Part II—Exceptions.

4. COMPANY'S RIGHT TO AMEND

The Company may amend this Commitment at any time. If the Company amends this Commitment to add a defect, lien, encumbrance, adverse claim, or other matter recorded in the Public Records prior to the Commitment Date, any liability of the Company is limited by Commitment Condition 5. The Company shall not be liable for any other amendment to this Commitment.

5. LIMITATIONS OF LIABILITY

(a) The Company's liability under Commitment Condition 4 is limited to the Proposed Insured's actual expense incurred in the interval between the Company's delivery to the Proposed Insured of the Commitment and the delivery of the amended Commitment, resulting from the Proposed Insured's good faith reliance to:
  (i) comply with the Schedule B, Part I—Requirements;
  (ii) eliminate, with the Company's written consent, any Schedule B, Part II—Exceptions; or
  (iii) acquire the Title or create the Mortgage covered by this Commitment.
(b) The Company shall not be liable under Commitment Condition 5(a) if the Proposed Insured requested the amendment or had Knowledge of the matter and did not notify the Company about it in writing.
(c) The Company will only have liability under Commitment Condition 4 if the Proposed Insured would not have incurred the expense had the Commitment included the added matter when the Commitment was first delivered to the Proposed Insured.
(d) The Company's liability shall not exceed the lesser of the Proposed Insured's actual expense incurred in good faith and described in Commitment Conditions 5(a)(i) through 5(a)(iii) or the Proposed Policy Amount.
(e) The Company shall not be liable for the content of the Transaction Identification Data, if any.
(f) In no event shall the Company be obligated to issue the Policy referred to in this Commitment unless all of the Schedule B, Part I—Requirements have been met to the satisfaction of the Company.
(g) In any event, the Company's liability is limited by the terms and provisions of the Policy.

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6. LIABILITY OF THE COMPANY MUST BE BASED ON THIS COMMITMENT

(a) Only a Proposed Insured identified in Schedule A, and no other person, may make a claim under this Commitment.
(b) Any claim must be based in contract and must be restricted solely to the terms and provisions of this Commitment.
(c) Until the Policy is issued, this Commitment, as last revised, is the exclusive and entire agreement between the parties with respect to the subject matter of this Commitment and supersedes all prior commitment negotiations, representations, and proposals of any kind, whether written or oral, express or implied, relating to the subject matter of this Commitment.
(d) The deletion or modification of any Schedule B, Part II—Exception does not constitute an agreement or obligation to provide coverage beyond the terms and provisions of this Commitment or the Policy.
(e) Any amendment or endorsement to this Commitment must be in writing and authenticated by a person authorized by the Company.
(f) When the Policy is issued, all liability and obligation under this Commitment will end and the Company's only liability will be under the Policy.

7. IF THIS COMMITMENT HAS BEEN ISSUED BY AN ISSUING AGENT

The issuing agent is the Company's agent only for the limited purpose of issuing title insurance commitments and policies. The issuing agent is not the Company's agent for the purpose of providing closing or settlement services.

8. PRO-FORMA POLICY

The Company may provide, at the request of a Proposed Insured, a pro-forma policy illustrating the coverage that the Company may provide. A pro-forma policy neither reflects the status of Title at the time that the pro-forma policy is delivered to a Proposed Insured, nor is it a commitment to insure.

9. ARBITRATION

Arbitration provision intentionally removed.

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Transaction Identification Data for reference only:

Issuing Agent: First American Title Insurance Company National Commercial Services
Commitment No.: NCS-1057922-B-SA1
Property Address: 25025 Corsica Lane, Menifee, CA 92585
Revision No.:

Issuing Office: 3281 E Guasti Road, Suite 440, Ontario, CA 91761
Issuing Office File No.: NCS-1057922-B-SA1
Escrow Officer/Assistant: Daniel Bell/Steven Sinohui
Phone: (949)885-2448/(949)885-2469
Email: dbell@firstam.com/ssinohui@firstam.com
Title Officer/Assistant: Greg Franke/Noyra Kamper
Phone: (909)510-6200/(909)510-6200
Email: gfranke@firstam.com/NoKamper@firstam.com

SCHEDULE A

1. Commitment Date: April 09, 2021 at 7:30 AM
2. Policy to be issued:

   (a) ☒ 2006 ALTA® Standard Owner Policy
   Proposed Insured: To Be Determined
   Proposed Policy Amount: $ To Be Determined

   (b) ☐ 2006 ALTA® Policy
   Proposed Insured:
   Proposed Policy Amount: $

   (c) ☐ 2006 ALTA® Policy
   Proposed Insured:
   Proposed Policy Amount: $

3. The estate or interest in the Land described or referred to in this Commitment is

   Fee

4. The Title is, at the Commitment Date, vested in:

   Jorge Rivera and Beatriz Rivera, husband and wife as joint tenants

5. The Land is described as follows:

   See Exhibit "A" attached hereto and made a part hereof

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Commitment No.: NCS-1057922-B-SA1

SCHEDULE B, PART I

Requirements

All of the following Requirements must be met:

A. The Proposed Insured must notify the Company in writing of the name of any party not referred to in this Commitment who will obtain an interest in the Land or who will make a loan on the Land. The Company may then make additional Requirements or Exceptions.

B. Pay the agreed amount for the estate or interest to be insured.

C. Pay the premiums, fees, and charges for the Policy to the Company.

D. Documents satisfactory to the Company that convey the Title or create the Mortgage to be insured, or both, must be properly authorized, executed, delivered, and recorded in the Public Records.

E. Releases(s) or Reconveyance(s) of Item(s): 12, 13 and 14

F. Other: None

G. You must give us the following information:
   a. Any off record leases, surveys, etc.
   b. Statement(s) of Identity, all parties.
   c. Other: None

The following additional requirements, as indicated by "X", must be met:

[X] H. Provide information regarding any off-record matters, which may include, but are not limited to: leases, recent works of improvement, or commitment statements in effect under the Environmental Responsibility Acceptance Act, Civil Code Section 850, et seq.

The Company's Owner's Affidavit form (as provided by the company) must be completed and submitted prior to close in order to satisfy this requirement. This Commitment will then be subject to such further exceptions and/or requirements as may be deemed necessary.

[] I. An ALTA/NSPS survey of recent date, which complies with the current minimum standard detail requirements for ALTA/NSPS land title surveys, must be submitted to the Company for review. This Commitment will then be subject to such further exceptions and/or requirements as may be deemed necessary.

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions.

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[] J. The following LLC documentation is required from:

(i) a copy of the Articles of Organization
(ii) a copy of the Operating Agreement, if applicable
(iii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iv) express Company Consent to the current transaction

[] K. The following partnership documentation is required **:**

(i) a copy of the partnership agreement, including all applicable amendments thereto
(ii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iii) express Partnership Consent to the current transaction

[] L. The following corporation documentation is required:

(i) a copy of the Articles of Incorporation
(ii) a copy of the Bylaws, including all applicable Amendments thereto
(iii) a Certificate of Good Standing and/or other evidence of current Authority to Conduct Business within the State
(iv) express Corporate Resolution consenting to the current transaction

[] M. Based upon the Company's review of that certain partnership/operating agreement dated **Not disclosed** for the proposed insured herein, the following requirements must be met:
Any further amendments to said agreement must be submitted to the Company, together with an affidavit from one of the general partners or members stating that it is a true copy, that said partnership or limited liability company is in full force and effect, and that there have been no further amendments to the agreement. This Commitment will then be subject to such further requirements as may be deemed necessary.

[] N. A copy of the complete lease, as referenced in Schedule A, #3 herein, together with any amendments and/or assignments thereto, must be submitted to the Company for review, along with an affidavit executed by the present lessee stating that it is a true copy, that the lease is in full force and effect, and that there have been no further amendments to the lease. This Commitment will then be subject to such further requirements as may be deemed necessary.

[X] O. Approval from the Company's Underwriting Department must be obtained for issuance of the policy contemplated herein and any endorsements requested thereunder. This Commitment will then be subject to such further requirements as may be required to obtain such approval.

[] P. Potential additional requirements, if ALTA Extended coverage is contemplated hereunder, and work on the land has commenced prior to close, some or all of the following requirements, and any other requirements which may be deemed necessary, may need to be met:

[] Q. The Company's "Indemnity Agreement I" must be executed by the appropriate parties.

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[] R. Financial statements from the appropriate parties must be submitted to the Company for review.

[] S. A copy of the construction contract must be submitted to the Company for review.

[] T. An inspection of the Land must be performed by the Company for verification of the phase of construction.

[] U. The Company's "Mechanic's Lien Risk Addendum" form must be completed by a Company employee, based upon information furnished by the appropriate parties involved.

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Commitment No.: NCS-1057922-B-SA1

SCHEDULE B, PART II

Exceptions

THIS COMMITMENT DOES NOT REPUBLISH ANY COVENANT, CONDITION, RESTRICTION, OR LIMITATION CONTAINED IN ANY DOCUMENT REFERRED TO IN THIS COMMITMENT TO THE EXTENT THAT THE SPECIFIC COVENANT, CONDITION, RESTRICTION, OR LIMITATION VIOLATES STATE OR FEDERAL LAW BASED ON RACE, COLOR, RELIGION, SEX, SEXUAL ORIENTATION, GENDER IDENTITY, HANDICAP, FAMILIAL STATUS, OR NATIONAL ORIGIN.

The Policy will not insure against loss or damage resulting from the terms and provisions of any lease or easement identified in Schedule A, and will include the following Exceptions unless cleared to the satisfaction of the Company:

1. Any defect, lien, encumbrance, adverse claim, or other matter that appears for the first time in the Public Records or is created, attaches, or is disclosed between the Commitment Date and the date on which all of the Schedule B, Part I-Requirements are met.

2. (a) Taxes or assessments that are not shown as existing liens by the records of any taxing authority that levies taxes or assessments on real property or by the Public Records; (b) proceedings by a public agency that may result in taxes or assessments, or notices of such proceedings, whether or not shown by the records of such agency or by the Public Records.

3. Any facts, rights, interests, or claims that are not shown by the Public Records but that could be ascertained by an inspection of the Land or that may be asserted by persons in possession of the Land.

4. Easements, liens or encumbrances, or claims thereof, not shown by the Public Records.

5. Any encroachment, encumbrance, violation, variation, or adverse circumstance affecting the Title that would be disclosed by an accurate and complete land survey of the Land and not shown by the Public Records.

6. (a) Unpatented mining claims; (b) reservations or exceptions in patents or in Acts authorizing the issuance thereof; (c) water rights, claims or title to water, whether or not the matters excepted under (a), (b), or (c) are shown by the Public Records.

7. General and special taxes and assessments for the fiscal year 2021-2022, a lien not yet due or payable.

8. The lien of supplemental taxes, if any, assessed pursuant to Chapter 3.5 commencing with Section 75 of the California Revenue and Taxation Code.

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9. An easement for pole lines and incidental purposes, recorded May 11, 1928 in Book 765 of Deeds, Page 185.

In Favor of:	The Southern Sierras Power Company
Affects:	as described therein

10. An easement shown or dedicated on the map of Parcel Map No. 14619 recorded December 19, 1980 and on file in Book 86, Page 31, of Parcel Maps.
For: Public utilities and incidental purposes.

11. Notice and certificate of occupancy for mobile home installation on a foundation system (HCD 433A(4/86) recorded August 19, 2002 as Instrument No. 2002-457780 of Official Records of Riverside County, California.

12. A deed of trust to secure an original indebtedness of $329,914.00 recorded July 14, 2017 as Instrument No. 2017-0289050 of Official Records.

Dated:	July 13, 2017
Trustor:	Mayolo Fernando Ramirez and Brandi Patricia Ramirez, husband and wife as joint tenants
Trustee:	Fidelity National Title Company
Beneficiary:	Mortgage Electronic Registration Systems, Inc. ("MERS"), as Nominee for
Lender:	Wholesale Capital Corporation, a corporation organized and existing under the laws of California

A document recorded June 18, 2020 as Instrument No. 2020-0262461 of Official Records provides that UPF Washington, Incorporated was substituted as trustee under the deed of trust.

The effect of a document entitled "Full Reconveyance", recorded June 18, 2020 as Instrument No. 2020-0262462 of Official Records.

Note: The Company will require satisfactory proof of full payment of the debt secured by said mortgage or deed of trust prior to removing this exception or insuring the contemplated transaction.

13. A deed of trust to secure an original indebtedness of $323,824.00 recorded June 15, 2020 as Instrument No. 2020-0253162 of Official Records.

Dated:	April 23, 2020
Trustor:	Mayolo Fernando Ramirez and Brandi Patricia Ramirez, husband and wife as joint tenants
Trustee:	Pacific Coast Title
Beneficiary:	Mortgage Electronic Registration Systems, Inc. ("MERS"), as Nominee for
Lender:	Intercontinental Capital Group, Inc., a New York corporation organized and existing under the laws of New York

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14. A deed of trust to secure an original indebtedness of $372,000.00 recorded April 07, 2021 as Instrument No. 2021-0219133 of Official Records.

Dated:	March 31, 2021
Trustor:	Jorge Rivera and Beatriz Rivera, husband and wife as joint tenants
Trustee:	Fidelity National Title Company
Beneficiary:	Mortgage Electronic Registration Systems, Inc. ("MERS"), as Nominee for
Lender:	Broker Solutions, Inc. dba New American Funding, a corporation organized and existing under the laws of California

15. Any defects, liens, encumbrances or other matters which name parties with the same or similar names as Jorge Rivera. The name search necessary to ascertain the existence of such matters has not been completed. In order to complete this preliminary report or commitment, we will require a statement of information.

16. Water rights, claims or title to water, whether or not shown by the Public Records.

17. Rights of parties in possession.

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ALERT - CA Senate Bill 2 imposes an additional fee of $75 up to $225 at the time of recording on certain transactions effective January 1, 2018. Please contact your First American Title representative for more information on how this may affect your closing.

NOTE to proposed insured lender only: No Private transfer fee covenant, as defined in Federal Housing Finance Agency Final Rule 12 CFR Part 1228, that was created and first appears in the Public Records on or after February 8, 2011, encumbers the Title except as follows: None

1. Taxes for proration purposes only for the fiscal year 2020-2021.

First Installment:	$1,945.33, PAID
Second Installment:	$1,945.33, PAID
Tax Rate Area:	026-199
APN:	330-180-029

2. According to the latest available equalized assessment roll in the office of the county tax assessor, there is located on the land a(n) Single Family Residence known as 25025 Corsica Lane, Menifee, CA.

3. According to the public records, there has been no conveyance of the land within a period of twenty four months prior to the date of this report, except as follows:

   A document recorded April 07, 2021 as Instrument No. 2021-0219132 of Official Records.

From:	Mayolo Fernando Ramirez, husband and wife as joint tenants and Brandi Patricia Ramirez
To:	Jorge Rivera and Beatriz Rivera, husband and wife as joint tenants

4. The policy contemplated by this report/commitment will not insure the title to any mobilehome or manufactured home that may be located on the land. The Company will consider issuing such coverage only upon the customer's specific request.

5. This preliminary report/commitment was prepared based upon an application for a policy of title insurance that identified land by street address or assessor's parcel number only. It is the responsibility of the applicant to determine whether the land referred to herein is in fact the land that is to be described in the policy or policies to be issued.

The map attached, if any, may or may not be a survey of the land depicted thereon. First American Title Insurance Company expressly disclaims any liability for loss or damage which may result from reliance on this map except to the extent coverage for such loss or damage is expressly provided by the terms and provisions of this Commitment or the Policy, if any, to which the map is attached.

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Exhibit A

File No.: NCS-1057922-B-SA1

The Land referred to herein below is situated in the City of Menifee, County of Riverside, State of California, and is described as follows:

PARCEL 1 OF PARCEL MAP NO. 14619, IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS PER MAP RECORDED IN BOOK 86, PAGE 31 OF PARCEL MAPS, RECORDS OF SAID COUNTY.

For conveyancing purposes only: APN 330-180-029

This page is only a part of a 2016 ALTA® Commitment for Title Insurance issued by First American Title Insurance Company. This Commitment is not valid without the Notice; the Commitment to Issue Policy; the Commitment Conditions; Schedule A; Schedule B, Part I-Requirements; Schedule B, Part II-Exceptions.

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APPENDIX C: REGULATORY DATABASE REPORT

PARTNER

APN 330-180-029
25025 Corsica Lane
Sun City, CA 92585

Inquiry Number: 6685622.2s
September 30, 2021

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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GEOCHECK ADDENDUM

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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

25025 CORSICA LANE
SUN CITY, CA 92585

COORDINATES

Latitude (North):	33.7380930 - 33° 44' 17.13''
Longitude (West):	117.2210750 - 117° 13' 15.87''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	479521.3
UTM Y (Meters):	3732945.2
Elevation:	1459 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
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
25025 CORSICA LANE
SUN CITY, CA 92585

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	NORMAN CARMICHAEL	25151 CORSICA LANE	RCRA NonGen / NLR	Higher	64, 0.012, ESE
2	NATIVE PLANT	202 ETHANAC	LUST, HIST CORTESE	Lower	1716, 0.325, NNE
3	MONUMENT RANCH SITE	GOETZ ROAD / ETHANAC	ENVIROSTOR, SCH, CERS	Lower	1741, 0.330, NNW
4	ELEMENTARY SCHOOL NO	FENCE POST DRIVE/RAM	ENVIROSTOR, SCH	Higher	3882, 0.735, South

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-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS Engineering Controls Sites List
US INST CONTROLS Institutional Controls Sites List

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
CPS-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

VCP Voluntary Cleanup Program Properties
INDIAN VCP Voluntary Cleanup Priority Listing

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
SWRCY Recycler Database
HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
ODI Open Dump Inventory
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
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
CERS HAZ WASTE ---- CERS HAZ WASTE
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CERS TANKS ---- California Environmental Reporting System (CERS) Tanks
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

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
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
UXO	Unexploded Ordnance Sites
DOCKET HWC	Hazardous Waste Compliance Docket Listing
ECHO	Enforcement & Compliance History Information
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
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System
HWTS	Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations

EXECUTIVE SUMMARY

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.

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 04/23/2021 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ELEMENTARY SCHOOL NO Facility Id: 60000776 Status: Inactive - Withdrawn	***FENCE POST DRIVE/RAM***	***S 1/2 - 1 (0.735 mi.)***	***4***	***17***

Lower Elevation	Address	Direction / Distance	Map ID	Page
MONUMENT RANCH SITE Facility Id: 70000024 Status: No Further Action	***GOETZ ROAD / ETHANAC***	***NNW 1/4 - 1/2 (0.330 mi.)***	***3***	***12***

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 is 1 LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NATIVE PLANT	***202 ETHANAC***	***NNE 1/4 - 1/2 (0.325 mi.)***	***2***	***11***

Database: LUST REG 8, Date of Government Version: 02/14/2005
Facility Status: Case Closed
Global ID: T0606500254

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

RCRA NonGen / NLR: 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.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/22/2021 has revealed that there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
NORMAN CARMICHAEL	25151 CORSICA LANE	ESE 0 - 1/8 (0.012 mi.)	1	9

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.

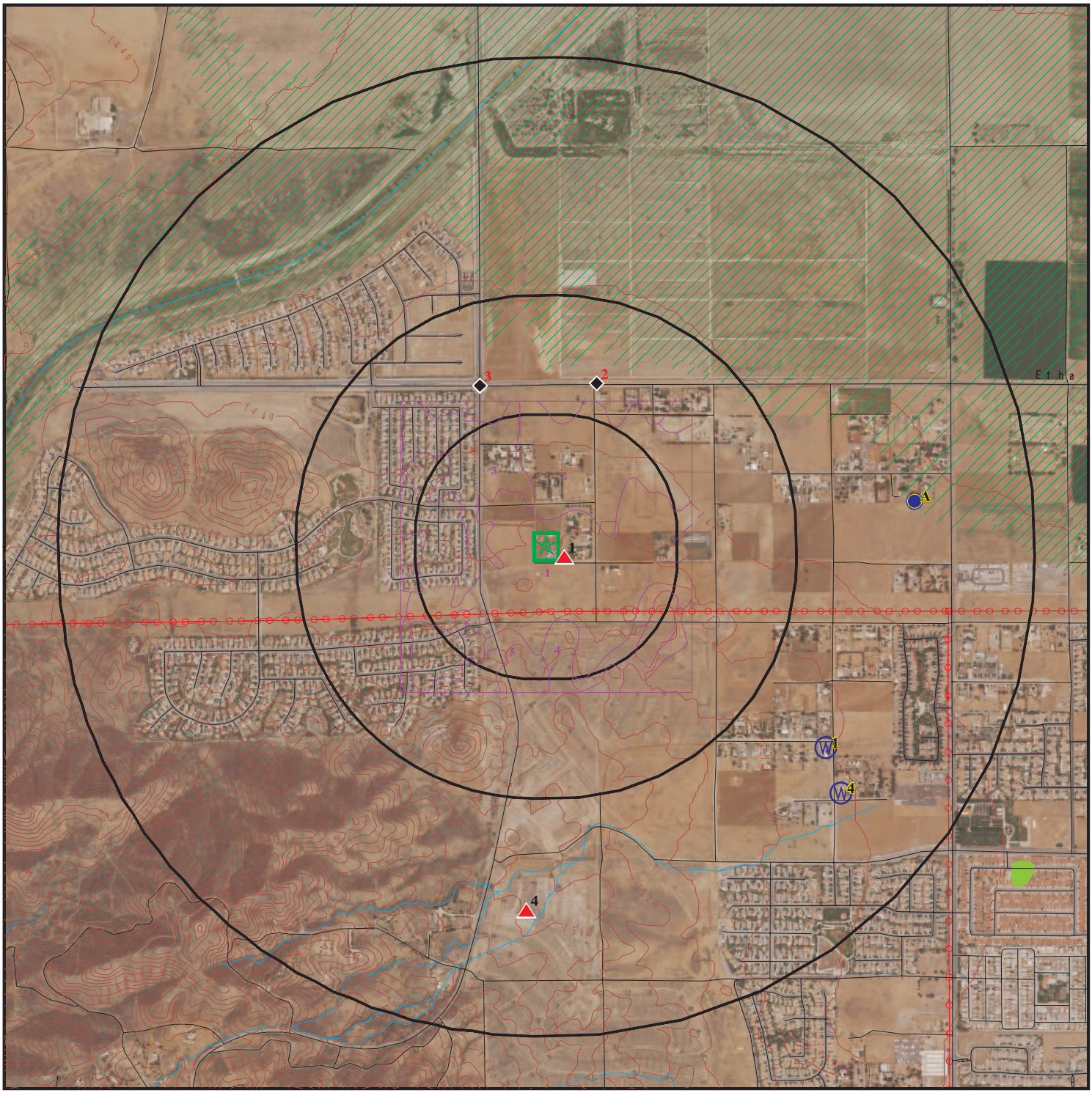
Lower Elevation	Address	Direction / Distance	Map ID	Page
NATIVE PLANT	***202 ETHANAC***	***NNE 1/4 - 1/2 (0.325 mi.)***	***2***	***11***

Reg Id: 083301975T

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 6685622.2S



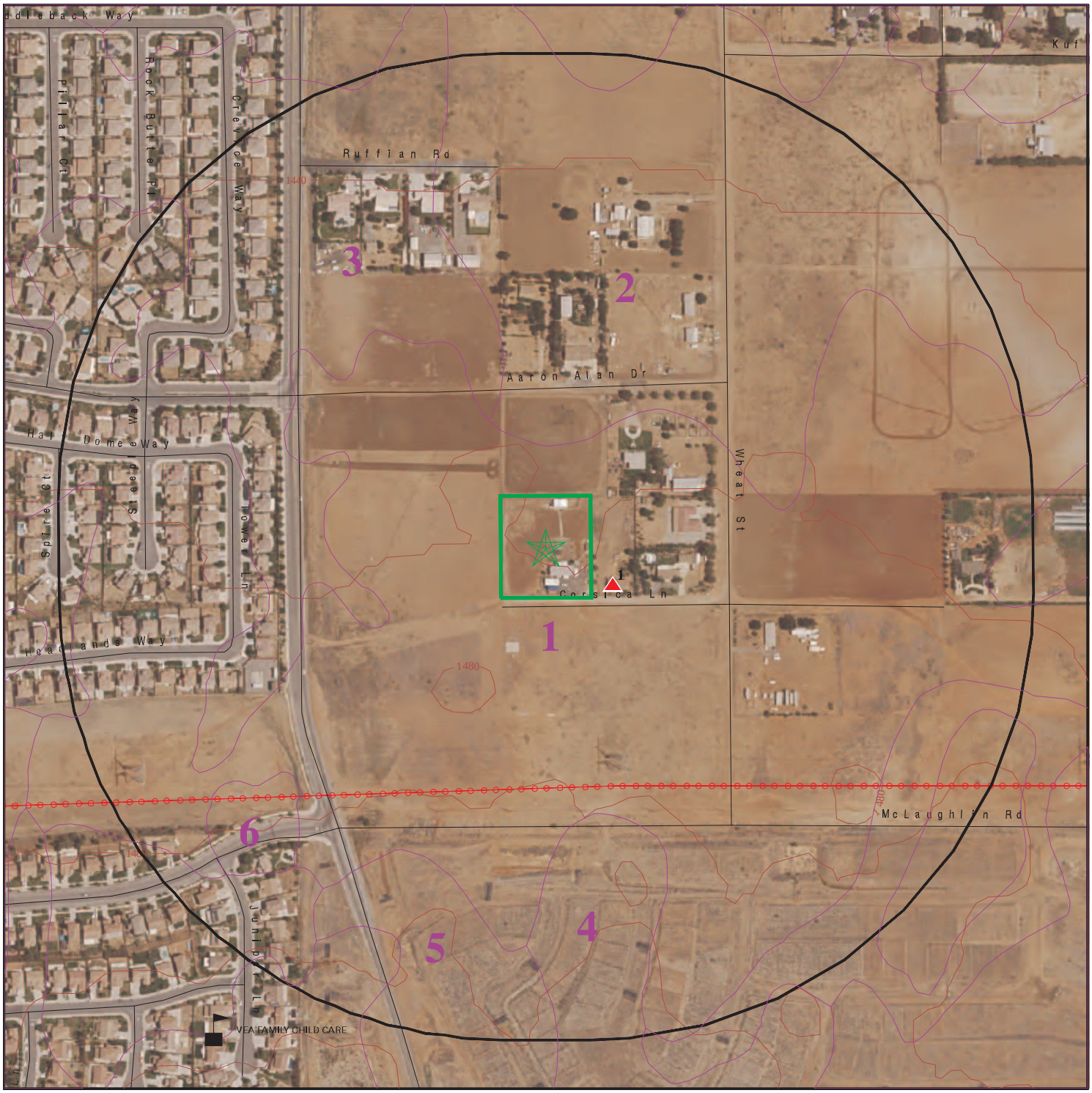
- Target Property
- Sites at elevations higher than or equal to the target property
- Sites at elevations lower than the target property
- Manufactured Gas Plants
- National Priority List Sites
- Dept. Defense Sites
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- 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:	APN 330-180-029	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	25025 Corsica Lane Sun City CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.738093 / 117.221075	INQUIRY #:	6685622.2s
		DATE:	September 30, 2021 5:50 pm

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DETAIL MAP - 6685622.2S



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

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

Areas of Concern

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:	APN 330-180-029	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	25025 Corsica Lane Sun City CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.738093 / 117.221075	INQUIRY #:	6685622.2s
		DATE:	September 30, 2021 5:53 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	1.000		0	0	0	0	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-VSQG	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 CONTROLS	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	1	1	NR	2
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	1	NR	NR	1

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
CPS-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								
VCP	0.500		0	0	0	NR	NR	0
INDIAN 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	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	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
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	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
CERS TANKS	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

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
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
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		1	0	NR	NR	NR	1
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	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	TP		NR	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	NR	0
DOCKET HWC	TP		NR	NR	NR	NR	NR	0
ECHO	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

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
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
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
UIC GEO	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
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
HWTS	TP		NR	NR	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	1	0	3	1	0	5

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

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
ESE
< 1/8
0.012 mi.
64 ft.

NORMAN CARMICHAEL
25151 CORSICA LANE
MENIFEE, CA 92585

RCRA NonGen / NLR

1026479469
CAC003085393

Relative:
Higher

Actual:
1462 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:		2020-09-24 00:00:00.0
Handler Name:	NORMAN CARMICHAEL	
Handler Address:		25151 CORSICA LANE
Handler City,State,Zip:		MENIFEE, CA 92585
EPA ID:		CAC003085393
Contact Name:		NORMAN CARMICHAEL
Contact Address:		17760 VIA GRACIA
Contact City,State,Zip:		SAN DIEGO, CA 92128
Contact Telephone:		858-232-8698
Contact Fax:		Not reported
Contact Email:		NCARMIC@OUTLOOK.COM
Contact Title:		Not reported
EPA Region:		09
Land Type:		Not reported
Federal Waste Generator Description:		Not a generator, verified
Non-Notifier:		Not reported
Biennial Report Cycle:		Not reported
Accessibility:		Not reported
Active Site Indicator:		Not reported
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		17760 VIA GRACIA
Mailing City,State,Zip:		SAN DIEGO, CA 92128
Owner Name:		NORMAN CARMICHAEL
Owner Type:		Other
Operator Name:		NORMAN CARMICHAEL
Operator Type:		Other
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No
Transporter Activity:		No
Transfer Facility Activity:		No
Recycler Activity with Storage:		No
Small Quantity On-Site Burner Exemption:		No
Smelting Melting and Refining Furnace Exemption:		No
Underground Injection Control:		No
Off-Site Waste Receipt:		No
Universal Waste Indicator:		No
Universal Waste Destination Facility:		No
Federal Universal Waste:		No
Active Site Fed-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site Converter Treatment storage and Disposal Facility:		Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site State-Reg Handler:		---
Federal Facility Indicator:		Not reported
Hazardous Secondary Material Indicator:		N
Sub-Part K Indicator:		Not reported
Commercial TSD Indicator:		No
Treatment Storage and Disposal Type:		Not reported
2018 GPRA Permit Baseline:		Not on the Baseline
2018 GPRA Renewals Baseline:		Not on the Baseline
Permit Renewals Workload Universe:		Not reported

NORMAN CARMICHAEL (Continued) **1026479469**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2020-09-27 18:05:24.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	NORMAN CARMICHAEL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	17760 VIA GRACIA
Owner/Operator City,State,Zip:	SAN DIEGO, CA 92128
Owner/Operator Telephone:	858-232-8698
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	NORMAN CARMICHAEL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	17760 VIA GRACIA
Owner/Operator City,State,Zip:	SAN DIEGO, CA 92128
Owner/Operator Telephone:	858-232-8698
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

NORMAN CARMICHAEL (Continued) **1026479469**

Historic Generators:
Receive Date: 2020-09-24 00:00:00.0
Handler Name: NORMAN CARMICHAEL
Federal Waste Generator Description: Not a generator, verified
State District Owner: Not reported
Large Quantity Handler of Universal Waste: No
Recognized Trader Importer: No
Recognized Trader Exporter: No
Spent Lead Acid Battery Importer: No
Spent Lead Acid Battery Exporter: No
Current Record: Yes
Non Storage Recycler Activity: Not reported
Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
NAICS Code: 56299
NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

---

2 **NATIVE PLANT** **LUST** **S101307986**
NNE **202 ETHANAC** **HIST CORTESE** **N/A**
1/4-1/2 **PERRIS, CA 92570**
0.325 mi.
1716 ft.

Relative: **Lower**

Actual: **1431 ft.**

LUST REG 8:
Name: NATIVE PLANT
Address: 202 ETHANAC
City: PERRIS
Region: 8
County: Riverside
Regional Board: Santa Ana Region
Facility Status: Case Closed
Case Number: 083301975T
Local Case Num: 91562
Case Type: Soil only
Substance: Gasoline
Qty Leaked: Not reported
Abate Method: Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming)
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: T0606500254
How Stopped Date: 5/29/1990
Enter Date: 12/19/1991

NATIVE PLANT (Continued) **S101307986**

Date Confirmation of Leak Began:	Not reported
Date Preliminary Assessment Began:	Not reported
Discover Date:	5/29/1990
Enforcement Date:	Not reported
Close Date:	11/8/1993
Date Prelim Assessment Workplan Submitted:	6/21/1991
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	4/2/1992
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	9/30/1993
Enter Date:	12/19/1991
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.793243
Longitude:	-117.2829513
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0
Max MTBE Soil:	Not reported
MTBE Fuel:	1
MTBE Tested:	Site NOT Tested for MTBE.Includes Unknown and Not Analyzed.
MTBE Class:	*
Staff:	CAB
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	UNNAMED BASIN
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

HIST CORTESE:

edr_fname:	NATIVE PLANT
edr_fadd1:	202 ETHANAC
City,State,Zip:	PERRIS, CA
Region:	CORTESE
Facility County Code:	33
Reg By:	LTNKA
Reg Id:	083301975T

---

3 **MONUMENT RANCH SITE** **ENVIROSTOR** **S109548225**
NNW **GOETZ ROAD / ETHANAC ROAD** **SCH** **N/A**
1/4-1/2 **PERRIS, CA 92570** **CERS**
0.330 mi.
1741 ft.

Relative:
Lower

Actual:
1431 ft.

ENVIROSTOR:

Name:	MONUMENT RANCH SITE
Address:	GOETZ ROAD / ETHANAC ROAD
City,State,Zip:	PERRIS, CA 92570
Facility ID:	70000024

MONUMENT RANCH SITE (Continued) **S109548225**

Status:	No Further Action
Status Date:	06/22/2006
Site Code:	404643
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	23
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	61
Senate:	31
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.74253
Longitude:	-117.2405
APN:	330-160-007, 330-160-008, 330-160-009, 330-160-010, 330-160-011, 330-160-012, 330-160-013, 330-160-014, 330-160-015, 330160007, 330160008
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic DDD DDE DDT
Confirmed COC:	30001-NO 30006-NO 30007-NO 30008-NO
Potential Description:	SOIL
Alias Name:	Romoland School District
Alias Type:	Alternate Name
Alias Name:	330-160-007
Alias Type:	APN
Alias Name:	330-160-008
Alias Type:	APN
Alias Name:	330-160-009
Alias Type:	APN
Alias Name:	330-160-010
Alias Type:	APN
Alias Name:	330-160-011
Alias Type:	APN
Alias Name:	330-160-012
Alias Type:	APN
Alias Name:	330-160-013
Alias Type:	APN
Alias Name:	330-160-014
Alias Type:	APN
Alias Name:	330-160-015
Alias Type:	APN
Alias Name:	330160007
Alias Type:	APN
Alias Name:	330160008
Alias Type:	APN
Alias Name:	404643
Alias Type:	Project Code (Site Code)
Alias Name:	20050024
Alias Type:	Envirostor ID Number
Alias Name:	70000024
Alias Type:	Envirostor ID Number

MONUMENT RANCH SITE (Continued) **S109548225**

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	08/09/2005
Comments:	Not reported

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	01/03/2006
Comments:	PEA workplan approval

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Report
Completed Date:	06/20/2006
Comments:	DTSC issued a No Further Action determination based on a Preliminary Environmental Assessment Report

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	06/26/2006
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:

Name:	MONUMENT RANCH SITE
Address:	GOETZ ROAD / ETHANAC ROAD
City,State,Zip:	PERRIS, CA 92570
Facility ID:	70000024
Site Type:	School Investigation
Site Type Detail:	School
Site Mgmt. Req.:	NONE SPECIFIED
Acres:	23
National Priorities List:	NO
Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404643
Assembly:	61
Senate:	31

MONUMENT RANCH SITE (Continued) **S109548225**

Special Program Status:	Not reported
Status:	No Further Action
Status Date:	06/22/2006
Restricted Use:	NO
Funding:	School District
Latitude:	33.74253
Longitude:	-117.2405
APN:	330-160-007, 330-160-008, 330-160-009, 330-160-010, 330-160-011, 330-160-012, 330-160-013, 330-160-014, 330-160-015, 330160007, 330160008
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, DDD, DDE, DDT
Confirmed COC:	30001-NO, 30006-NO, 30007-NO, 30008-NO
Potential Description:	SOIL
Alias Name:	Romoland School District
Alias Type:	Alternate Name
Alias Name:	330-160-007
Alias Type:	APN
Alias Name:	330-160-008
Alias Type:	APN
Alias Name:	330-160-009
Alias Type:	APN
Alias Name:	330-160-010
Alias Type:	APN
Alias Name:	330-160-011
Alias Type:	APN
Alias Name:	330-160-012
Alias Type:	APN
Alias Name:	330-160-013
Alias Type:	APN
Alias Name:	330-160-014
Alias Type:	APN
Alias Name:	330-160-015
Alias Type:	APN
Alias Name:	330160007
Alias Type:	APN
Alias Name:	330160008
Alias Type:	APN
Alias Name:	404643
Alias Type:	Project Code (Site Code)
Alias Name:	20050024
Alias Type:	Envirostor ID Number
Alias Name:	70000024
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Environmental Oversight Agreement
Completed Date:	08/09/2005
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Preliminary Endangerment Assessment Workplan
Completed Date:	01/03/2006
Comments:	PEA workplan approval

MONUMENT RANCH SITE (Continued) **S109548225**

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/20/2006
Comments: DTSC issued a No Further Action determination based on a Preliminary Environmental Assessment Report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 06/26/2006
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

CERS:
Name: MONUMENT RANCH SITE
Address: GOETZ ROAD / ETHANAC ROAD
City,State,Zip: PERRIS, CA 92570
Site ID: 340232
CERS ID: 70000024
CERS Description: School Investigation

Affiliation:
Affiliation Type Desc: Lead Project Manager
Entity Name: IVY OSORNIO
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Supervisor
Entity Name: SHAHIR HADDAD
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

4
South
1/2-1
0.735 mi.
3882 ft.

ELEMENTARY SCHOOL NO. 14
FENCE POST DRIVE/RAM DRIVE
SUN CITY, CA 92585

ENVIROSTOR SCH

S108974351
N/A

Relative:
Higher

Actual:
1557 ft.

ENVIROSTOR:

Name:	ELEMENTARY SCHOOL NO. 14
Address:	FENCE POST DRIVE/RAM DRIVE
City,State,Zip:	SUN CITY, CA 92585
Facility ID:	60000776
Status:	Inactive - Withdrawn
Status Date:	10/22/2008
Site Code:	404764
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	12.5
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Angela Garcia
Supervisor:	Shahir Haddad
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:	33.727
Longitude:	-117.2218
APN:	NONE SPECIFIED
Past Use:	NONE
Potential COC:	DDD DDE DDT
Confirmed COC:	30006-NO 30007-NO 30008-NO
Potential Description:	SOIL
Alias Name:	404764
Alias Type:	Project Code (Site Code)
Alias Name:	60000776
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	03/10/2008
Comments:	DTSC determined that a Preliminary Environmental Assessment is required based on the Phase I report
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	10/22/2008
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

ELEMENTARY SCHOOL NO. 14 (Continued) **S108974351**

Schedule Sub Area Name: Not reported
Schedule Document Type: Not reported
Schedule Due Date: Not reported
Schedule Revised Date: Not reported

SCH:

Name: ELEMENTARY SCHOOL NO. 14
Address: FENCE POST DRIVE/RAM DRIVE
City,State,Zip: SUN CITY, CA 92585
Facility ID: 60000776
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 12.5
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Angela Garcia
Supervisor: Shahir Haddad
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 404764
Assembly: 67
Senate: 23
Special Program Status: Not reported
Status: Inactive - Withdrawn
Status Date: 10/22/2008
Restricted Use: NO
Funding: School District
Latitude: 33.727
Longitude: -117.2218
APN: NONE SPECIFIED
Past Use: NONE
Potential COC: DDD, DDE, DDT
Confirmed COC: 30006-NO, 30007-NO, 30008-NO
Potential Description: SOIL
Alias Name: 404764
Alias Type: Project Code (Site Code)
Alias Name: 60000776
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 03/10/2008
Comments: DTSC determined that a Preliminary Environmental Assessment is required based on the Phase I report

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 10/22/2008
Comments: Not reported

Future Area Name: Not reported

ELEMENTARY SCHOOL NO. 14 (Continued) **S108974351**

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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/11/2021
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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/11/2021
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

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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: EPA
Telephone: N/A
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/11/2021
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: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 06/23/2021
Next Scheduled EDR Contact: 10/11/2021
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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/25/2021
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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/25/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly 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). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 05/10/2021
Date Data Arrived at EDR: 05/13/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 82

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 08/05/2021
Next Scheduled EDR Contact: 11/22/2021
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: 05/17/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/23/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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: 05/17/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 08/23/2021
Next Scheduled EDR Contact: 12/06/2021
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: 06/14/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 61

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 09/21/2021
Next Scheduled EDR Contact: 01/03/2022
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 05/10/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 77

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/22/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Quarterly

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: No Update Planned

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 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: No Update Planned

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

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 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

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: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/17/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 06/01/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

CPS-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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: 01/29/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Semi-Annually

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 05/20/2021
Date Data Arrived at EDR: 06/04/2021
Date Made Active in Reports: 08/30/2021
Number of Days to Update: 87

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 09/08/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)

Military ust sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

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: 09/09/2021
Next Scheduled EDR Contact: 12/27/2021
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: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/17/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 06/01/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

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: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 07/08/2021
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: 06/17/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 09/13/2021
Number of Days to Update: 88

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 09/21/2021
Next Scheduled EDR Contact: 01/03/2022
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: 06/10/2021
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 09/14/2021
Next Scheduled EDR Contact: 12/27/2021
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: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 06/04/2021
Date Data Arrived at EDR: 06/04/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 84

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/08/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 11/22/2021
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: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

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

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: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
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: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 05/18/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 77

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 10/18/2021
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

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

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: 05/18/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 77

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 06/04/2021
Date Data Arrived at EDR: 06/04/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/08/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

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

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

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/07/2021
Date Made Active in Reports: 07/23/2021
Number of Days to Update: 77

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/14/2021
Data Release Frequency: Varies

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

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

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: 05/27/2021
Date Data Arrived at EDR: 05/28/2021
Date Made Active in Reports: 08/20/2021
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/11/2021
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: 05/28/2021
Date Data Arrived at EDR: 05/28/2021
Date Made Active in Reports: 08/20/2021
Number of Days to Update: 84

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
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: 09/12/2021
Date Data Arrived at EDR: 09/13/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 15

Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 09/13/2021
Next Scheduled EDR Contact: 01/03/2022
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: 04/04/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82

Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 05/04/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 85

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 11/29/2021
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: 07/13/2021
Next Scheduled EDR Contact: 10/25/2021
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: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
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: 08/06/2021
Next Scheduled EDR Contact: 11/22/2021
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: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
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: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 08/06/2021
Next Scheduled EDR Contact: 11/15/2021
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: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 09/17/2021
Next Scheduled EDR Contact: 12/27/2021
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: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 11/29/2021
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: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/16/2021
Number of Days to Update: 87

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/19/2021
Next Scheduled EDR Contact: 11/01/2021
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: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 12/13/2021
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: 05/07/2021
Date Data Arrived at EDR: 05/13/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/14/2021
Next Scheduled EDR Contact: 11/01/2021
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: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/05/2021
Number of Days to Update: 50

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 11/15/2021
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: 11/19/2020
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
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: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
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: No Update Planned

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: No Update Planned

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: 03/08/2021
Date Data Arrived at EDR: 03/11/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 61

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/14/2021
Next Scheduled EDR Contact: 11/01/2021
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: 12/31/2019
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 09/03/2021
Next Scheduled EDR Contact: 12/13/2021
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: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
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: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 08/06/2021
Next Scheduled EDR Contact: 11/15/2021
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: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 09/27/2021
Next Scheduled EDR Contact: 01/10/2022
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: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/23/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Quarterly

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: 06/30/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 07/16/2021
Number of Days to Update: 2
Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/02/2021
Next Scheduled EDR Contact: 10/18/2021
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: 12/31/2017
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151
Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 09/15/2021
Next Scheduled EDR Contact: 01/03/2022
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: 07/02/2021
Next Scheduled EDR Contact: 10/18/2021
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: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3
Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/23/2021
Next Scheduled EDR Contact: 11/15/2021
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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74
Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 08/12/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 07/29/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 08/31/2021
Number of Days to Update: 27
Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 10/11/2021
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: 05/03/2021
Date Data Arrived at EDR: 05/25/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 78

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 89

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Quarterly

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: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 08/26/2021
Next Scheduled EDR Contact: 12/06/2021
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: 08/26/2021
Next Scheduled EDR Contact: 12/06/2021
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: 06/15/2021
Date Data Arrived at EDR: 06/16/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 62

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 09/14/2021
Next Scheduled EDR Contact: 12/20/2021
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: 05/05/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 91

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 08/26/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/26/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 89

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/07/2021
Next Scheduled EDR Contact: 10/25/2021
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: 05/14/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 81

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 08/13/2021
Next Scheduled EDR Contact: 11/29/2021
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: 06/17/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 09/14/2021
Number of Days to Update: 89

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 09/21/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 08/13/2021
Next Scheduled EDR Contact: 11/22/2021
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 05/26/2021
Date Made Active in Reports: 08/18/2021
Number of Days to Update: 84

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 05/18/2021
Date Data Arrived at EDR: 05/19/2021
Date Made Active in Reports: 08/05/2021
Number of Days to Update: 78

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Varies

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: 05/25/2021
Date Data Arrived at EDR: 05/28/2021
Date Made Active in Reports: 08/20/2021
Number of Days to Update: 84

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
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: 12/31/2019
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 09/17/2021
Next Scheduled EDR Contact: 12/27/2021
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: 04/16/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/14/2021
Date Data Arrived at EDR: 04/15/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/13/2021
Date Data Arrived at EDR: 05/13/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 74

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 08/04/2021
Next Scheduled EDR Contact: 11/22/2021
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: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Annually

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/14/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 74
Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 08/13/2021
Next Scheduled EDR Contact: 11/29/2021
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: 05/14/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 74
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 08/13/2021
Next Scheduled EDR Contact: 11/29/2021
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: 07/01/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 85
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/18/2021
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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
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: 05/06/2021
Date Data Arrived at EDR: 05/28/2021
Date Made Active in Reports: 08/20/2021
Number of Days to Update: 84
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 08/13/2021
Next Scheduled EDR Contact: 11/22/2021
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: 05/28/2021
Date Data Arrived at EDR: 05/28/2021
Date Made Active in Reports: 08/20/2021
Number of Days to Update: 84
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/04/2021
Date Data Arrived at EDR: 06/04/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 84
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 09/08/2021
Next Scheduled EDR Contact: 12/20/2021
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: 03/12/2021
Date Data Arrived at EDR: 03/16/2021
Date Made Active in Reports: 06/01/2021
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 08/26/2021
Next Scheduled EDR Contact: 12/27/2021
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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/25/2021
Number of Days to Update: 83
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
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 boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/18/2021
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: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: No Update Planned

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: 09/14/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 06/07/2021
Date Data Arrived at EDR: 06/07/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 81

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 09/08/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 05/19/2021
Date Data Arrived at EDR: 05/19/2021
Date Made Active in Reports: 08/12/2021
Number of Days to Update: 85
Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/24/2021
Number of Days to Update: 82
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/25/2021
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System

DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/08/2021
Date Data Arrived at EDR: 04/09/2021
Date Made Active in Reports: 04/20/2021
Number of Days to Update: 11

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System

Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 08/26/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Varies

PCS ENF: Enforcement data

No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 06/30/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits

An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/30/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

PCS: Permit Compliance System

PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/30/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: 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: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 06/29/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/22/2021
Number of Days to Update: 84

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 08/05/2021
Date Data Arrived at EDR: 08/06/2021
Date Made Active in Reports: 09/17/2021
Number of Days to Update: 42

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: 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: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/15/2021
Date Data Arrived at EDR: 06/16/2021
Date Made Active in Reports: 07/02/2021
Number of Days to Update: 16

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 09/14/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 04/21/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 81

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 12/17/2020
Date Data Arrived at EDR: 01/28/2021
Date Made Active in Reports: 04/16/2021
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/12/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 75

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: 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: 04/09/2021
Date Data Arrived at EDR: 06/23/2021
Date Made Active in Reports: 09/17/2021
Number of Days to Update: 86

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/23/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: 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: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/17/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 2

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/14/2021
Date Data Arrived at EDR: 04/15/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 82

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 04/22/2021
Date Data Arrived at EDR: 04/30/2021
Date Made Active in Reports: 07/19/2021
Number of Days to Update: 80

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/06/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 08/18/2021
Number of Days to Update: 6

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: 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: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 09/07/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List

Cupa facility list

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/12/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 75

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List

Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

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: N/A
Telephone: N/A
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/27/2021
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/08/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 07/09/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 81

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/24/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 02/04/2021
Date Data Arrived at EDR: 04/16/2021
Date Made Active in Reports: 04/21/2021
Number of Days to Update: 5

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 07/12/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 06/28/2021
Number of Days to Update: 11

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/24/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 09/14/2021
Number of Days to Update: 89
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 09/24/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Annually

UST EL SEGUNDO: 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: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: 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: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 09/23/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/24/2021
Date Data Arrived at EDR: 04/07/2021
Date Made Active in Reports: 06/24/2021
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/13/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 73

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 08/09/2021
Next Scheduled EDR Contact: 11/28/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/06/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/23/2021
Date Data Arrived at EDR: 06/23/2021
Date Made Active in Reports: 06/24/2021
Number of Days to Update: 1

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 09/23/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: 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: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 04/29/2021
Date Made Active in Reports: 07/15/2021
Number of Days to Update: 77

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 04/30/2021
Date Made Active in Reports: 07/19/2021
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 07/29/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 9

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/29/2021
Date Data Arrived at EDR: 04/30/2021
Date Made Active in Reports: 07/19/2021
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 07/29/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 05/26/2021
Date Made Active in Reports: 06/01/2021
Number of Days to Update: 6
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 06/29/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 14
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/27/2021
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 06/29/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 14
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/27/2021
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 03/30/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/23/2021
Number of Days to Update: 83
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 09/28/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Quarterly

ML SACRAMENTO: 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: 03/30/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/25/2021
Number of Days to Update: 85
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 08/04/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 04/29/2021
Date Made Active in Reports: 05/03/2021
Number of Days to Update: 4

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: 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: 05/19/2021
Date Data Arrived at EDR: 05/19/2021
Date Made Active in Reports: 06/07/2021
Number of Days to Update: 19

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: 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: 05/28/2021
Date Data Arrived at EDR: 05/28/2021
Date Made Active in Reports: 08/20/2021
Number of Days to Update: 84

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: 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: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/07/2021
Date Made Active in Reports: 07/23/2021
Number of Days to Update: 77
Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: 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: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/07/2021
Date Made Active in Reports: 07/23/2021
Number of Days to Update: 77
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/27/2021
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/07/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 05/14/2021
Number of Days to Update: 3
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 09/10/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 08/31/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: 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: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/24/2021
Date Data Arrived at EDR: 02/26/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 82
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 08/04/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: 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

LUST SANTA CLARA: 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: 08/17/2021
Next Scheduled EDR Contact: 12/06/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: 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: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: 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: 08/10/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 06/22/2021
Date Data Arrived at EDR: 06/23/2021
Date Made Active in Reports: 09/17/2021
Number of Days to Update: 86

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/12/2021
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 09/14/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 09/14/2021
Next Scheduled EDR Contact: 01/03/2022
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 05/14/2021
Date Data Arrived at EDR: 05/17/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 78

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 05/26/2021
Date Made Active in Reports: 08/18/2021
Number of Days to Update: 84

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 12/13/2021
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 04/14/2021
Date Data Arrived at EDR: 04/15/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 08/24/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: 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: 03/29/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 81

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

LF VENTURA: 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: 09/23/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: No Update Planned

LUST VENTURA: 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: 08/04/2021
Next Scheduled EDR Contact: 11/22/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: 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: 03/29/2021
Date Data Arrived at EDR: 04/21/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 2

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 06/04/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 84
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 09/08/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 06/22/2021
Date Data Arrived at EDR: 06/28/2021
Date Made Active in Reports: 09/21/2021
Number of Days to Update: 85
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 09/23/2021
Next Scheduled EDR Contact: 01/10/2022
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 04/21/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 20
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
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: 03/24/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 07/28/2021
Number of Days to Update: 78
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 08/10/2021
Next Scheduled EDR Contact: 11/22/2021
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
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: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 07/29/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/07/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 02/24/2021
Number of Days to Update: 13

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 08/11/2021
Next Scheduled EDR Contact: 11/29/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 09/01/2021
Next Scheduled EDR Contact: 12/20/2021
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: Endeavor Business Media

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 Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

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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 and Wildlife
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

APN 330-180-029
25025 CORSICA LANE
SUN CITY, CA 92585

TARGET PROPERTY COORDINATES

Latitude (North):	33.738093 - 33° 44' 17.13''
Longitude (West):	117.221075 - 117° 13' 15.87''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	479521.3
UTM Y (Meters):	3732945.2
Elevation:	1459 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 principle 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).

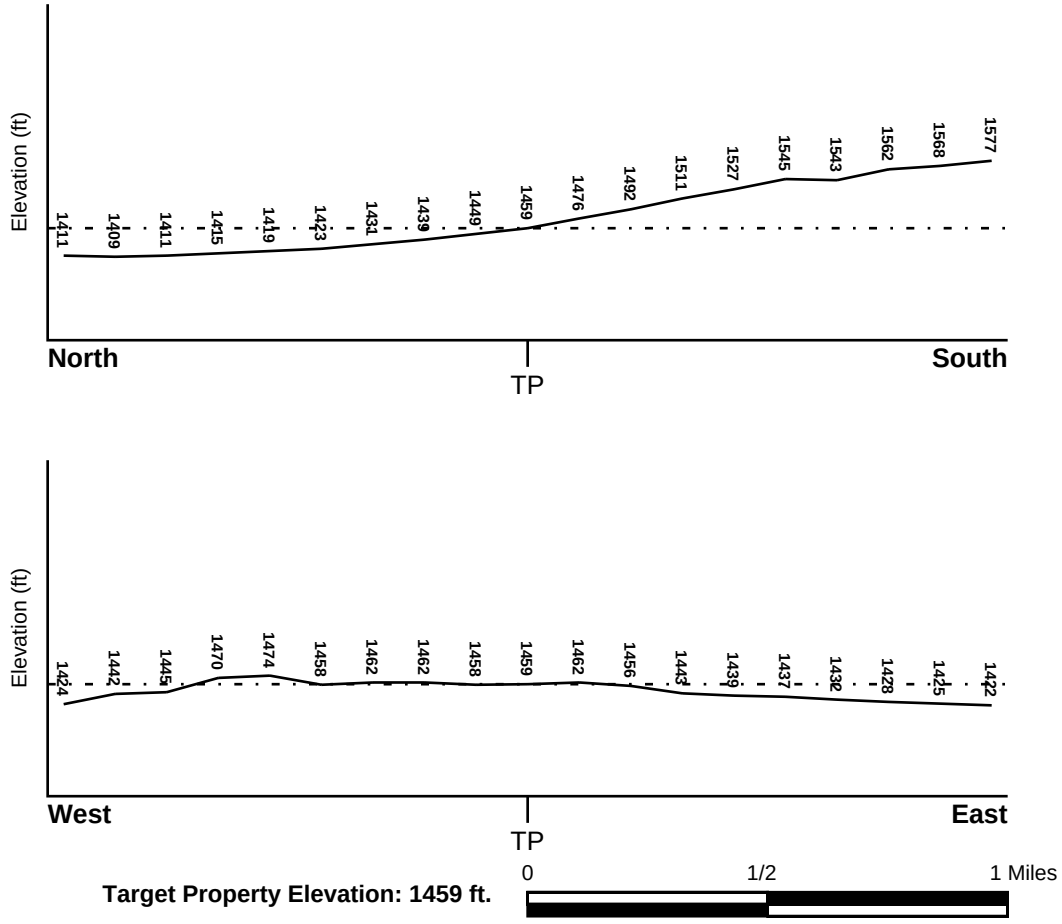
TOPOGRAPHIC INFORMATION

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 North

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1459 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
06065C2055H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1440H	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

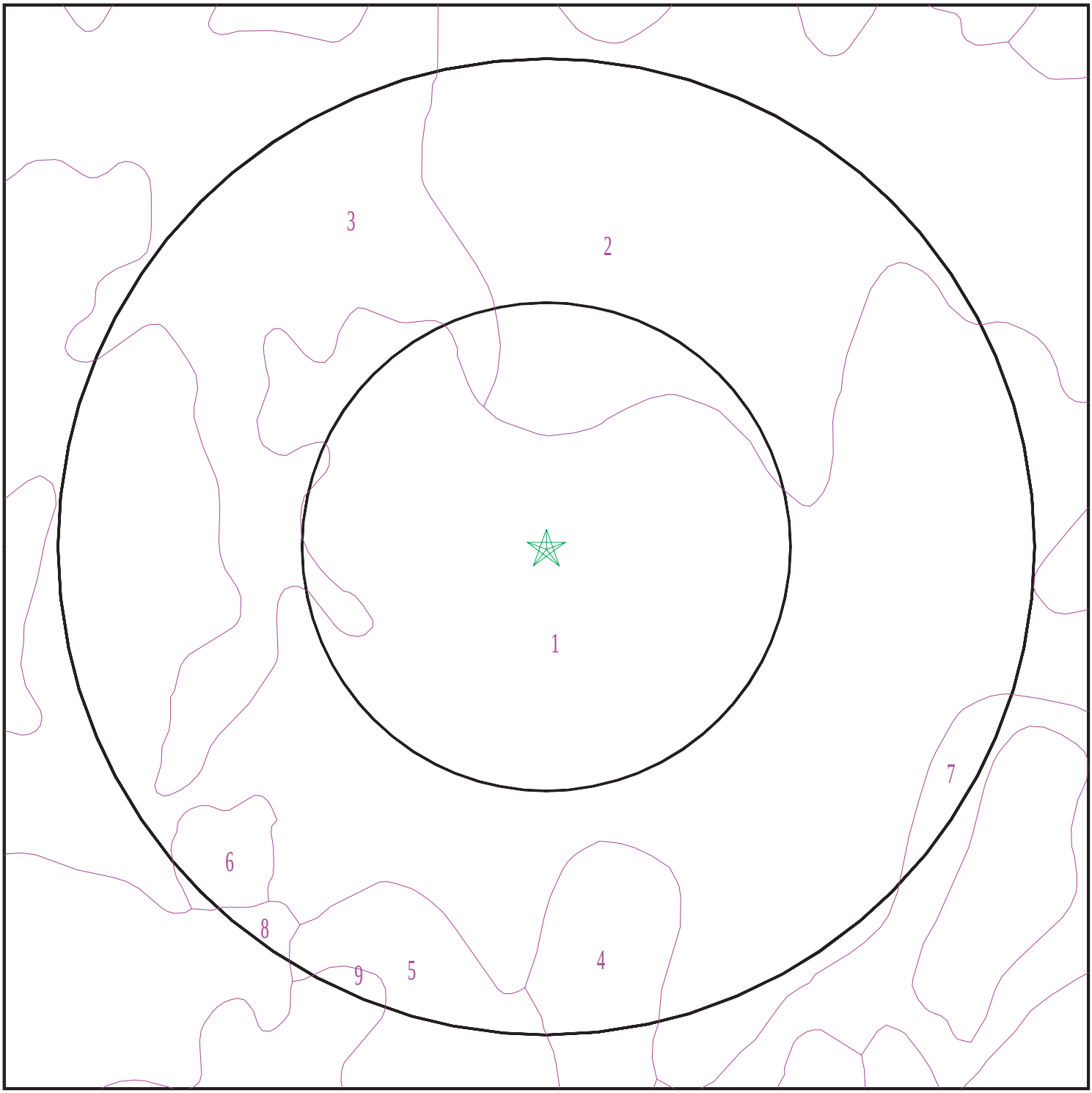
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

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 - 6685622.2s



Target Property
SSURGO Soil
Water

SITE NAME:	APN 330-180-029	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	25025 Corsica Lane Sun City CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.738093 / 117.221075	INQUIRY #:	6685622.2s
		DATE:	September 30, 2021 5:53 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: AULD

Soil Surface Texture: clay

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	27 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	27 inches	44 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	44 inches	48 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 2

Soil Component Name: LAS POSAS

Soil Surface Texture: 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	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	11 inches	31 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	31 inches	53 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: BUCHENAU

Soil Surface Texture: silt 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: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

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	7 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	7 inches	44 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	44 inches	61 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: CAJALCO

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	12 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	12 inches	18 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	61 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 5

Soil Component Name: CAJALCO

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	12 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	12 inches	22 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	22 inches	61 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 6

Soil Component Name: ARLINGTON

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	11 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: 141 Min: 42	Max: 7.3 Min: 6.6
2	11 inches	24 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: 141 Min: 42	Max: 7.3 Min: 6.6
3	24 inches	35 inches	cemented	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: 141 Min: 42	Max: 7.3 Min: 6.6
4	35 inches	46 inches	coarse 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: 141 Min: 42	Max: 7.3 Min: 6.6

Soil Map ID: 7

Soil Component Name: LAS POSAS

Soil Surface Texture: 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	11 inches	29 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	29 inches	53 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 8

Soil Component Name: WYMAN

Soil Surface Texture: 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: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	14 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%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
2	14 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
3	35 inches	50 inches	stratified loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
4	50 inches	59 inches	stratified loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Map ID: 9

Soil Component Name: CAJALCO

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	12 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	12 inches	18 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	61 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

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	USGS40000137574	1/2 - 1 Mile SE
A3	USGS40000137694	1/2 - 1 Mile East

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
4	USGS40000137534	1/2 - 1 Mile SE

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

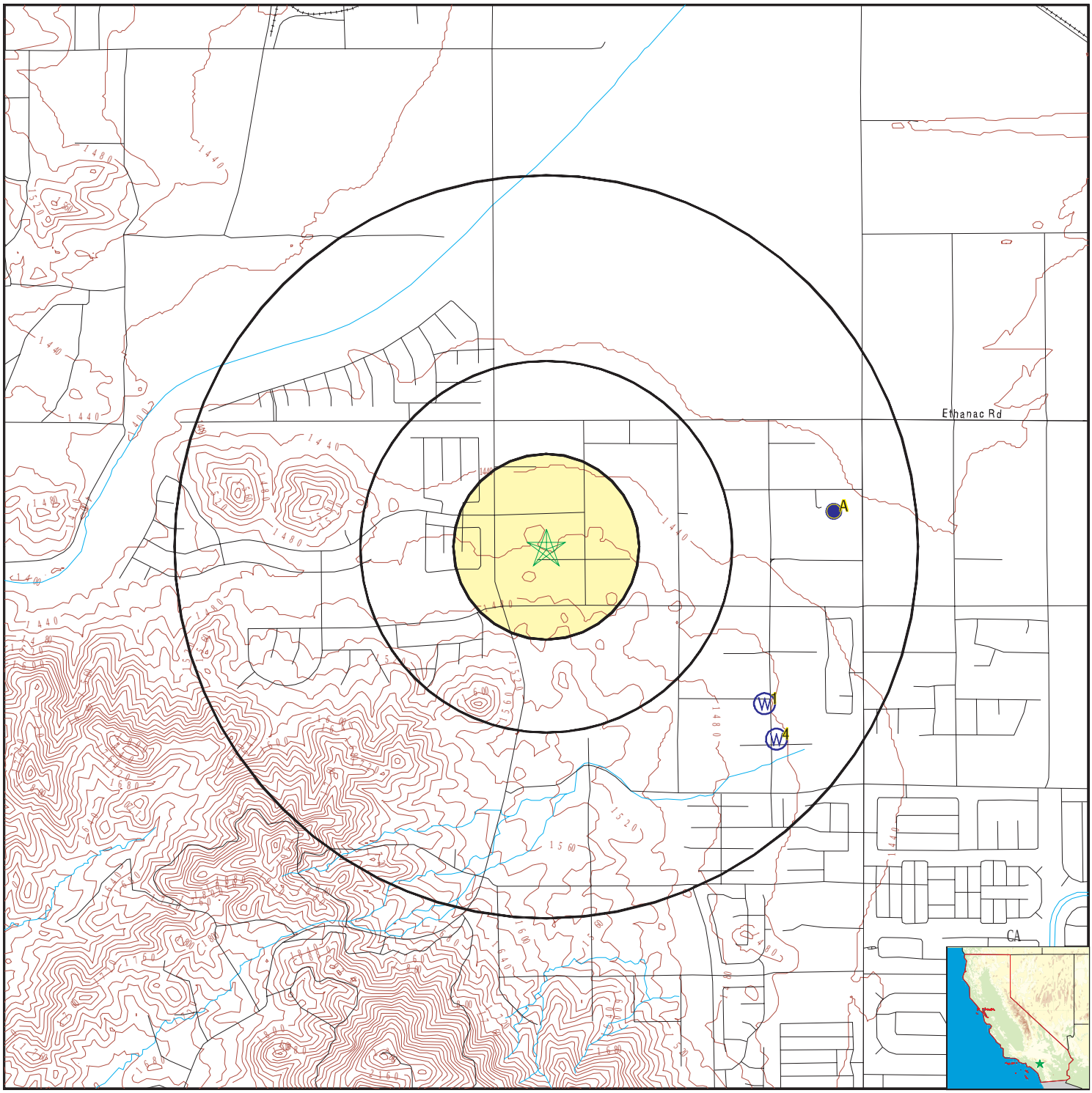
MAP ID	WELL ID	LOCATION FROM TP
No PWS System Found		

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	CADWR9000005258	1/2 - 1 Mile East

PHYSICAL SETTING SOURCE MAP - 6685622.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- 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:	APN 330-180-029	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	25025 Corsica Lane Sun City CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.738093 / 117.221075	INQUIRY #:	6685622.2s
		DATE:	September 30, 2021 5:53 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
SE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137574**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17Q001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	198809
Well Depth:	210	Well Depth Units:	ft
Well Hole Depth:	210	Well Hole Depth Units:	ft

A2
East
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000005258**

State Well #:	05S03W17A001S	Station ID:	6316
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

A3
East
1/2 - 1 Mile
Lower

FED USGS **USGS40000137694**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17A001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19950206	Well Depth:	160
Well Depth Units:	ft	Well Hole Depth:	160
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1995-02-07
Feet below surface:	22	Feet to sea level:	Not Reported
Note:	Not Reported		

4
SE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137534**

Organization ID:	USGS-CA
Organization Name:	USGS California Water Science Center

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Monitor Location:	005S003W17R002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19920211	Well Depth:	220
Well Depth Units:	ft	Well Hole Depth:	220
Well Hole Depth Units:	ft		

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 and Wildlife
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.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

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.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
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.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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: QUALIFICATIONS/INSURANCE

PARTNER

Education

Bachelor of Science, Geology, University of Texas at Austin

Highlights

29 years in the environmental assessment business
7 years performing Phase II Environmental Site Assessments and Remediation
10 years performing project management on local and nationwide commercial real estate transactions for multiple national clients
12 years performing Phase I Environmental Site Assessments, Transaction Screen Assessments, including Freddie Mac and Fannie Mae.

Experience Summary

Mr. Russell has 29 years of experience in the environmental service industry. He has significant experience in due diligence assessments for a variety of property types and the needs and requirements of varied number of reporting standards, including ASTM standards, EPA's All Appropriate Inquiry (AAI), and customized client formats. Specifically, Mr. Russell has performed Phase I Environmental Site Assessments, Environmental Transaction Screens, Phase II and III Subsurface Investigations, Remediation Design projects, Limited Asbestos Surveys, Lead-based Paint Surveys, Radon Studies, Mold Assessments, and Lead-in-water sampling and analysis.

Mr. Russell has managed numerous subsurface investigations to assess and cleanup the horizontal and vertical extent of soil and groundwater contamination. Mr. Russell has prepared Remediation Feasibility Studies, Work Plans and Remedial Action Plans for numerous projects that involved soil vapor extraction, LNAPL extraction and bioremediation. Mr. Russell conducted Preliminary Endangerment Assessments to evaluate potential contamination concerns on 10 proposed California public school sites. After review of report findings, the California Department of Toxic Substances Control determined all sites were suitable for developments. Mr. Russell has extensive experience conducting site assessments on large sections of vacant land for the purpose of evaluating and mapping planned developments. Mr. Russell has completed the California Desert Tortoise Environmental Awareness Training.

In addition, Mr. Russell has provided on behalf of clients interface with regulatory agencies and provided regulatory guidance and compliance with Cal-EPA, California Department of Toxic Substances Control (DTSC), California State Water Resources Control Board (SWRCB), and county and municipal regulations.

Finally, Mr. Russell's diversity across residential, industrial, municipal, and commercial environments are a major contribution to Partner Engineering and Science's Associate team in the Southwest region of the United States.

Project Experience

Wind Energy Development, Mojave Desert, Tehachapi Mountains, Colorado Desert, CA. Conducted Phase I ESA reports on over 30 new and previously existing wind turbine energy sites covering a total of approximately 40 square miles of land from the high desert Antelope Valley and Tehachapi Mountains in Kern County, CA, to sites in the area of Palm Desert and Palm Springs, CA.

Mojave Solar Project, Lockhart/Harper Lake, CA. Conducted Phase I ESA on the project Solar Energy Generating Station (SEGS) Harper Lake, which is designed to generate approximately 178 Megawatts of electricity from solar energy from two SEGS. When developed in 1990 it was the largest solar energy generation plant in the world. The SEGS are solar thermal plants, using reflective parabolic troughs (mirrors) to generate heat, then steam, then electrical power. The facility is comprised of approximately 1,000 acres of rows of parabolic troughs, two SEGS, and numerous operations support buildings.

DreamWorks Animation Campus, Glendale, CA. Conducted Phase I ESA on the world-famous DreamWorks Animation property. Developed in 1997, onsite operations consist of five buildings where DreamWorks creates and innovates 3D animated feature films, original TV series, and shorts, interactive media, live entertainment, themed experiences, consumer products, publishing, and technology. In addition to the current structures, the campus is improved with a restaurant, parking garage, manmade ponds and streams, courtyards, associated landscaping.

Meadowbrook Park & Tower Apartments, San Bernardino, California, CA. Conducted Phase I ESA Fannie Mae scope of work on the Housing and Urban Development (HUD) senior housing facility. The property consists of 267 residential apartment units in 18 buildings, including an 8-story tower apartment building. In addition to the current structures, the property is improved with a one-story office building, a one-story laundry building, two playgrounds, and three asphalt-paved surface parking lots, along with landscaped areas. The facility was developed in 1971. Historically, the southwest portion of the property was previously developed in 1972 with commercial buildings associated with the apartment development. In addition, the current parking lot on the southern portion of the subject property was previously developed with a parking structure that included surface parking and one level of subterranean parking.

Sonny Bettelyoun

Partner Associate

Education

University of Oregon, Political Science
Portland Community College, Environmental Science Course Work

Registrations

Environmental Professional – Phase I ESA
EPA AHERA Asbestos Inspector
EPA AHERA Asbestos Management Planner
Confined Space Entry
Radiation Safety, X-Ray Fluorescence Operator
OSHA 29 CFR 1910.120 HAZWOPER
Indoor Air Quality Assessment

Summary of Professional Experience

Mr. Bettelyoun has 17 years of experience in the environmental and industrial hygiene service industries. He has significant experience in due diligence assessments for a variety of property types and the needs and requirements of varied number of reporting standards, including ASTM standards, EPA's All Appropriate Inquiry (AAI), and customized client formats. Specifically, Mr. Bettelyoun has performed Phase I Environmental Site Assessments, Environmental Transaction Screens, Phase II Subsurface Investigations, Asbestos Surveys, Lead-based Paint Surveys and Indoor Air Quality (IAQ) studies.

Representative Phase I/II Environmental Site Assessment Project Experience:

- West Coast Bank - Various Sites, Oregon, Phase I ESAs
- US Bancorp - Various sites in Oregon and Washington - Phase I ESAs
- Marine Midland Bank; New York, New York-Project engineer for Phase I ESA on 13,000-acre farm/ranch in Southern Oregon, including aerial overflight, field reconnaissance, records review, and reporting, with emphasis on adjoining property use. The site was purchased by the Nature Conservancy and set aside for natural reclamation.
- First Union Bank; Cleveland, Ohio-Project engineer for Phase I ESA of 42 acres in Portland, Oregon, intended for about 500,000-square-foot retail shopping mall. Project included field reconnaissance, records review, and reporting.
- Waban Inc; Irvine, California-Project engineer for Phase I ESA on manufacturing facility including field reconnaissance, records review, and reporting.
- Lincoln Asset Management; Dallas, Texas-Project engineer for Phase I ESA on office building, apartment complex, and shopping center including field reconnaissance, records review, and reporting.
- CE John Company; Various Sites, Oregon, Washington, California, Utah-Phase I ESAs.
- City of Milwaukie, Oregon; Various Sites, Willamette River, Oregon-Phase I ESAs.
- Les Schwab Tire Company; Various Sites, Oregon, Washington, California-Phase I ESAs.

- Pacific One Bank; Thirty Sites, Oregon, Washington, Idaho-Phase I ESAs.
- Prestige Care; Various Sites, Oregon, Washington, Arizona, California-Phase I ESAs.
- Suburban Propane; Various Sites, Oregon, Washington-Phase I ESAs.
- Bank of the West, Various sites in Oregon and Washington - Phase I ESAs
- McCormick Pier Apartments; Portland, Oregon - Project engineer for Phase I and Phase II ESA for high profile apartment acquisition.

Representative Asbestos Survey Project Experience

- City of New York School System; New York-Asbestos inspector in charge of re-inspection teams for the City of New York school system campuses. Duties included accounting for asbestos materials, assessing their condition, sampling materials, and providing drawings for each building.
- David Douglas/Tigard/Hillsboro/Portland Public School Districts, Oregon - Project Engineer/Management Planner for AHERA asbestos surveys for four school districts. Responsibilities included semi-annual re-inspection and appropriate management planner responses to changes in asbestos-containing materials in school facilities.
- Port of Portland; Various Sites, Oregon-Asbestos Surveys for marine and airport facilities.
- Sears Stores; Albany, New York-Project engineer for asbestos survey on retail facilities, including identification/sampling of suspected asbestos materials, sample location drawings, and report preparations.
- State of Oregon; Department of General Services, Oregon-Asbestos Surveys of over 1,500 buildings.
- US Coast Guard; Various Sites, Oregon, Washington, Alaska, Hawaii-Asbestos/Lead Paint Surveys.

Representative Lead-Based Paint Survey Project Experience

- Bank United of Texas; Aloha, Oregon-Inspector technician for XRF lead and radon testing for apartment complex.
- Mason County; Shelton, Washington-Project Manager for XRF lead testing at historical residential property. Developed abatement and disposal options.
- US Coast Guard; Various Sites, Oregon, Washington, Alaska, Hawaii-Asbestos/Lead Paint Surveys.

Finally, Mr. Bettelyoun's diversity across residential, industrial and commercial environments is a major contribution to Partner Engineering and Science's Associate team in the Pacific Northwest region of the United States.

Education

Bachelor of Arts, Public Administration & Economics, San Diego State University
Executive MBA Program, 2000-2003

Highlights

Over 20 years of experience in the environmental and engineering consulting industry
Property Condition Assessments (PCAs)
Fannie Mae, Freddie Mac, and HUD due diligence

Experience Summary

Mr. Lambson is a true veteran of the commercial real estate services industry. He has over 20 years of experience managing and performing environmental and engineering consulting projects on a national level. Mr. Lambson serves as a Principal for Partner and is located in Partner's San Diego County office. Mr. Lambson currently provides client management and consulting to a nationwide client base and specializes in advising "equity" clients during the acquisition phase of commercial property transactions in the U.S., Mexico, and Canada.

Mr. Lambson has assisted clients on over 10,000 commercial real estate transactions throughout his career. His due diligence resume includes experience at all levels, and includes advising REITs, developers, property managers, retail companies, commercial real estate brokers, mortgage brokers, attorneys, lenders, universities, and real estate investment groups with the following nationwide services:

- Property Condition Assessments (PCAs)
- Individual Building System Inspections for Roof, Mechanical Electrical Plumbing (MEP), Elevator, Structure, Façade, and ADA/Accessibility
- Phase I Environmental Site Assessments (ESAs)
- Phase II Subsurface Investigations (Soil and groundwater sampling and analysis)
- Phase III Environmental Remediation Services
- Asbestos, Lead, Radon, Mold Sampling
- Seismic and Structural Assessments (PMLs)
- Energy Audits, Benchmarking, AB1103 Energy Disclosure, and LEED-related services
- Hydrology, Water Conservation and Efficiency
- Fannie Mae / Freddie Mac / HUD Due Diligence
- Geotechnical and Soils Reports
- Zoning Reports
- ALTA Surveys

Building Sciences

Property Condition Assessment, MEP Report, Roof Report, Elevator Report, Structural and Seismic Assessment for a high-profile Class A office campus acquisition in the San Francisco Bay Area

ADA Compliance and Accessibility Reviews for a national bank branch portfolio

Fannie Mae Property Condition / Physical Needs Assessment services for a 5400-unit multifamily portfolio in Nevada

Environmental Assessments
Phase I and Phase II Environmental Assessments for a 75-acre aerospace facility in the Northwest United States

Over 500 Phase I Environmental Site Assessments for a national fast-food chain

Environmental consulting for over 1 million acres of desert land in California, Nevada, and Arizona

Land Surveys
ALTA Surveys for 2400-unit apartment portfolio in the Midwest

Multi-Site Portfolios
113-site office portfolio acquisition for a national REIT

122-site hotel portfolio for a national lending institution

55-site hotel portfolio acquisition for a private investment group

68-site healthcare portfolio acquisition for a national REIT

50-site country club/golf course acquisition for a private investment group

Energy and Water Efficiency
Energy & Water consulting for a national property owner that operates and manages 30 retail and office centers on the West Coast and Texas

Affiliations

National Association of Real Estate Investment Trusts (NAREIT)
International Council of Shopping Centers (ICSC)
U.S Green Building Council (USGBC)
Society of Industrial and Office Realtors, San Diego County (SIOR)
National Association of Industrial & Office Parks, Southern California (NAIOP)
San Diego Habitat Conservancy, Board of Directors. 2010 - 2014

Speaking

Bisnow Conference, Panel Moderator, La Jolla, CA, October 2014. Moderated panel on Southern California Real Estate Trends.

Globestreet, ICSC Western States Conference, San Diego, CA May 2013. Video interview regarding retail real estate trends and due diligence.

Publications

Shopping Centers Today, 2010. Authored article on LEED applications for shopping centers and retail assets.

Contact

mlambson@partneresi.com

PARTNER
Engineering and Science, Inc.®



PHASE I ENVIRONMENTAL SITE ASSESSMENT REPORT

Menifee Assemblage
APNs 330-180-010 and 330-180-046
Menifee, CA 92585

Report Date: August 13, 2021
Partner Project No. 21-330210.1



Prepared for:

Danbe Real Estate Advisors
523 Main Street
El Segundo, California 90245

PARTNER
Engineering and Science, Inc.

August 13, 2021

Mr. Wayne Bush
Danbe Real Estate Advisors
523 Main Street
El Segundo, California 90245

Subject: Phase I Environmental Site Assessment
Menifee Assemblage
APNs 330-180-010 and 330-180-046
Menifee, Ca. 92585
Partner Project No. 21-330210.1

Dear Mr. Bush:

Partner Engineering and Science, Inc. (Partner) is pleased to provide the results of the *Phase I Environmental Site Assessment* (Phase I ESA) report of the abovementioned address (the "subject property"). This assessment was performed in conformance with the scope and limitations as detailed in the ASTM Practice E1527-13 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process.

This assessment included a site reconnaissance as well as research and interviews with representatives of the public, property ownership, site manager, and regulatory agencies. An assessment was made, conclusions stated, and recommendations outlined.

We appreciate the opportunity to provide environmental services to you. If you have any questions concerning this report, or if we can assist you in any other matter, please contact me at (619) 925-9672.

Sincerely,

DRAFT

Mark Lambson
Principal

EXECUTIVE SUMMARY

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in accordance with the scope of work and limitations of ASTM Standard Practice E1527-13, the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) and set forth by Danbe Real Estate Advisors for the property located at APNs 330-180-010 and 330-180-046 in Menifee, Riverside County, California (the "subject property"). The Phase I Environmental Site Assessment is designed to provide Danbe Real Estate Advisors with an assessment concerning environmental conditions (limited to those issues identified in the report) as they exist at the subject property.

Property Description

The subject property is located on the east side of Goetz Road and the west side of Wheat Street within a mixed undeveloped/residential area of Riverside County. Please refer to the table below for further description of the subject property:

Subject Property Data	
Address:	APNs 330-180-010 and 330-180-046 (No assigned address), Menifee, California
Property Use:	Vacant
Land Acreage (Ac):	8.72 Ac
Number of Buildings:	0
Assessor's Parcel Number (APN):	330-180-010 and 330-180-046
Site Assessment Performed By:	G. Rob Loomer of Partner
Site Assessment Conducted On:	July 27, 2021

The subject property is currently unoccupied with no observed or reported onsite operations. The subject property is undeveloped land consisting of a small concrete slab, open soil, and limited debris.

According to available historical sources, the subject property has been undeveloped as early as 1901.

The immediately surrounding properties consist of undeveloped land and residences to the north across unpaved Corsica Lane; undeveloped land to the south; undeveloped land and a residence to the east across unpaved Wheat Street; and a single-family residential development to the west beyond a narrow strip of undeveloped land and across Goetz Road.

According to the Water Resources Data Report for Riverside County, published by the *EMWD* dated 2021, the Subject Property is located within the Mills service area with estimated ground water levels from 40 to 60 feet below ground surface. According to topographic map interpretation, the direction of groundwater flow in the vicinity of the subject property is inferred to be toward the north.

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- Partner did not identify any environmental issues during the course of this assessment.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of APNs 330-180-010 and 330-180-046 in Menifee, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions or environmental issues in connection with the subject property. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

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1.0 INTRODUCTION

Partner Engineering and Science, Inc. (Partner) has performed a Phase I Environmental Site Assessment (ESA) in conformance with the scope and limitations of ASTM Standard Practice E1527-13 and the Environmental Protection Agency Standards and Practices for All Appropriate Inquiries (AAI) (40 CFR Part 312) for the property located at APNs 330-180-010 and 330-180-046 in Menifee, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this scope of work are described in the report.

1.1 Purpose

The purpose of this ESA is to identify existing or potential Recognized Environmental Conditions (as defined by ASTM Standard E1527-13) affecting the subject property that: 1) constitute or result in a material violation or a potential material violation of any applicable environmental law; 2) impose any material constraints on the operation of the subject property or require a material change in the use thereof; 3) require clean-up, remedial action or other response with respect to Hazardous Substances or Petroleum Products on or affecting the subject property under any applicable environmental law; 4) may affect the value of the subject property; and 5) may require specific actions to be performed with regard to such conditions and circumstances. The information contained in the ESA Report will be used by Client to: 1) evaluate its legal and financial liabilities for transactions related to foreclosure, purchase, sale, loan origination, loan workout or seller financing; 2) evaluate the subject property's overall development potential, the associated market value and the impact of applicable laws that restrict financial and other types of assistance for the future development of the subject property; and/or 3) determine whether specific actions are required to be performed prior to the foreclosure, purchase, sale, loan origination, loan workout or seller financing of the subject property.

This ESA was performed to permit the *User* to satisfy one of the requirements to qualify for the innocent landowner, contiguous property owner, or bona fide prospective purchaser limitations on scope of Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) (42 U.S.C. §9601) liability (hereinafter, the "*landowner liability protections*," or "*LLPs*"). ASTM Standard E1527-13 constitutes "*all appropriate inquiry* into the previous ownership and uses of the *property* consistent with good commercial or customary practice" as defined at 42 U.S.C. §9601(35)(B).

1.2 Scope of Work

The scope of work for this ESA is in accordance with the requirements of ASTM Standard E1527-13. This assessment included: 1) a property and adjacent site reconnaissance; 2) interviews with key personnel; 3) a review of historical sources; 4) a review of regulatory agency records; and 5) a review of a regulatory database report provided by a third-party vendor. Partner contacted local agencies, such as environmental health departments, fire departments and building departments in order to determine any current and/or former hazardous substances usage, storage and/or releases of hazardous substances on the subject property. Additionally, Partner researched information on the presence of activity and use limitations (AULs) at these agencies. As defined by ASTM E1527-13, AULs are the legal or physical restrictions or limitations on the use of, or access to, a site or facility: 1) to reduce or eliminate potential exposure to hazardous substances or petroleum products in the soil or groundwater on the subject

property; or 2) to prevent activities that could interfere with the effectiveness of a response action, in order to ensure maintenance of a condition of no significant risk to public health or the environment. These legal or physical restrictions, which may include institutional and/or engineering controls (IC/ECs), are intended to prevent adverse impacts to individuals or populations that may be exposed to hazardous substances and petroleum products in the soil or groundwater on the property.

If requested by Client, this report may also include the identification, discussion of, and/or limited sampling of asbestos-containing materials (ACMs), lead-based paint (LBP), mold, and/or radon.

1.3 Limitations

Partner warrants that the findings and conclusions contained herein were accomplished in accordance with the methodologies set forth in the Scope of Work. These methodologies are described as representing good commercial and customary practice for conducting an ESA of a property for the purpose of identifying recognized environmental conditions. There is a possibility that even with the proper application of these methodologies there may exist on the subject property conditions that could not be identified within the scope of the assessment, or which were not reasonably identifiable from the available information. Partner believes that the information obtained from the record review and the interviews concerning the subject property is reliable. However, Partner cannot and does not warrant or guarantee that the information provided by these other sources is accurate or complete. The conclusions and findings set forth in this report are strictly limited in time and scope to the date of the evaluations. The conclusions presented in the report are based solely on the services described therein, and not on scientific tasks or procedures beyond the scope of agreed-upon services or the time and budgeting restraints imposed by the Client. No other warranties are implied or expressed.

Some of the information provided in this report is based upon personal interviews, and research of available documents, records, and maps held by the appropriate government and private agencies. This report is subject to the limitations of historical documentation, availability, and accuracy of pertinent records, and the personal recollections of those persons contacted.

This practice does not address requirements of any state or local laws or of any federal laws other than the all appropriate inquiry provisions of the LLPs. Further, this report does not intend to address all of the safety concerns, if any, associated with the subject property.

Environmental concerns, which are beyond the scope of a Phase I ESA as defined by ASTM include the following: ACMs, LBP, radon, and lead in drinking water. These issues may affect environmental risk at the subject property and may warrant discussion and/or assessment; however, are considered non-scope issues. If specifically requested by the Client, these non-scope issues are discussed in Section 6.3.

1.4 User Reliance

Danbe Real Estate Advisors engaged Partner to perform this assessment in accordance with an agreement governing the nature, scope and purpose of the work as well as other matters critical to the engagement. All reports, both verbal and written, are for the sole use and benefit of Danbe Real Estate Advisors. Either verbally or in writing, third parties may come into possession of this report or all or part of the information generated as a result of this work. In the absence of a written agreement with Partner granting such rights, no third parties shall have rights of recourse or recovery whatsoever under any

course of action against Partner, its officers, employees, vendors, successors or assigns. Any such unauthorized user shall be responsible to protect, indemnify and hold Partner, Client and their respective officers, employees, vendors, successors and assigns harmless from any and all claims, damages, losses, liabilities, expenses (including reasonable attorneys' fees) and costs attributable to such Use. Unauthorized use of this report shall constitute acceptance of and commitment to these responsibilities, which shall be irrevocable and shall apply regardless of the cause of action or legal theory pled or asserted. Additional legal penalties may apply.

1.5 Limiting Conditions

The findings and conclusions contain all of the limitations inherent in these methodologies that are referred to in ASTM E1527-13.

Specific limitations and exceptions to this ESA are more specifically set forth below:

- Interviews with past or current owners, operators and occupants were not reasonably ascertainable and thus constitute a data gap. Based on information obtained from other historical sources (as discussed in Section 3.0), this data gap is not expected to alter the findings of this assessment.
- Partner requested information relative to deed restrictions and environmental liens, and completion of the AAI User Questionnaire from the Report User. This information was not provided at the time of the assessment.

Due to time constraints associated with this report, the Client has requested the report despite the above-listed limitations.

2.0 SITE DESCRIPTION

2.1 Site Location and Legal Description

The subject property at APNs 330-180-010 and 330-180-046 in Menifee, California, is located on the east side of Goetz Road and the west side of Wheat Street. According to the Riverside County Assessor, the subject property is legally described as Tax Map 330, Block 180 as Parcels 010 and 046, and has been owned by the current owner since at least 2018.

Please refer to Figure 1: Site Location Map, Figure 2: Site Plan, Figure 3: Topographic Map, and Appendix A: Site Photographs for the location and site characteristics of the subject property.

2.2 Current Property Use

The subject property is designated for Economic Development Corridor – Northern Gateway (EDC-NG) by the city of Menifee.

The subject property was not identified in the regulatory database report of Section 4.2.

2.3 Current Use of Adjacent Properties

The subject property is located within a mixed undeveloped/residential area of Riverside County. During the vicinity reconnaissance, Partner observed the following land use on properties in the immediate vicinity of the subject property:

Immediately Surrounding Properties

North: Undeveloped land along the west side and residences (25025 and 25151 Wheat Street and 25232 Corsica Way) beyond unpaved Corsica Way along the east side.
South: Undeveloped land.
East: A residence (26420 Wheat Street) beyond unpaved Wheat Street.
West: A strip of undeveloped land and Paved Goetz Road beyond which isa single-family residential development.

The adjacent property to the north was identified as a RCRA NonGen site in the regulatory database report of Section 4.2.

2.4 Physical Setting Sources

2.4.1 Topography

The United States Geological Survey (USGS) *Romoland, California* Quadrangle 7.5-minute series topographic map was reviewed for this ESA. According to the contour lines on the topographic map, the subject property is located at approximately 1,467 feet above mean sea level (MSL). The contour lines in the area of the subject property indicate the area is sloping gently toward the north. The subject property is depicted on the 2012 map as undeveloped.

A copy of the most recent topographic map is included as Figure 3 of this report.

2.4.2 Hydrology

According to topographic map interpretation, the direction of groundwater flow in the vicinity of the subject property is inferred to be toward the north. The nearest surface water in the vicinity of the subject

property is the San Joaquin River channel located approximately 1.0 mile north-northwest of the subject property. No settling ponds, lagoons, surface impoundments, wetlands or natural catch basins were observed at the subject property during this assessment.

According to available information, a public water system operated by the Eastern Municipal Water District (EMWD) serves the subject property vicinity. The sources of public water for the City of Menifee are surface water from the Colorado River and public wells through the Menifee desalters converting salty groundwater to potable water.

According to the Water Resources Data Report for Riverside County, published by the *EMWD* dated 2021, the Subject Property is located within the Mills service area with estimated ground water levels from 40 to 60 feet below ground surface.

2.4.3 Geology/Soils

The subject property is situated within the northwest margin of a slightly elevated plain termed the east Riverside Mesa and is underlain by 400 to 500 feet of unconsolidated Pleistocene age alluvium composed of coarse gravel, sand, silt and clay. These sediments are derived primarily from the Cretaceous plutonic rocks of the Southern California Batholiths which crop out as the Box Springs Mountains to the east, the La Loma Hills to the north, and the Jurupa Mountains to the west of the subject property.

Based on information obtained from the Riverside County conducted by the United States Department of Agriculture, Soil Conservation Service (1971) has classified the soils beneath the subject property and vicinity as being Hanford coarse sandy loam with estimated slopes between two and nine percent. The Hanford soil series is considered to be a well-drained, coarse sandy loam textured soil with a depth of at least 60 inches. General characteristics of the Hanford soil include moderately rapid permeability and a slightly acid soil reaction. Depth to the seasonal high-water table is greater than five feet.

2.4.4 Flood Zone Information

Partner performed a review of the Flood Insurance Rate Map, published by the Federal Emergency Management Agency. According to Community Panel Number 06065C2055H, dated August 18, 2014, the subject property appears to be located in Zone X, an area located outside of the 100-year and 500-year flood plains.

A copy of the reviewed flood map is not included in Appendix B of this report.

3.0 HISTORICAL INFORMATION

Partner obtained historical use information about the subject property from a variety of sources. A chronological listing of the historical data found is summarized in the table below:

Historical Use Information		
Period/Date	**Source**	**Description/Use**
1901-Present	Aerial Photographs, Interviews, Topographic Maps, City Directories and Onsite Observations	Undeveloped land

The subject property has been undeveloped throughout its researched history. No potential environmental concerns were identified in association with the current or former use of the subject property.

3.1 Aerial Photograph Review

Partner obtained available aerial photographs of the subject property and surrounding area from Environmental Data Resources (EDR) in July 2021. The following observations were noted to be visible on the subject property and adjacent properties during the aerial photograph review:

Date: 1938, 1949, 1953, 1961, 1967, 1974, 1978 and 1985 Scale: 1'=500"	
Subject Property:	Undeveloped ungraded land with no visible structures and an unpaved or paved road to the west.
North:	Undeveloped ungraded land with no visible structures.
South:	Undeveloped ungraded land with no visible structures.
East:	Undeveloped ungraded land with no visible structures.
West:	Undeveloped ungraded land with no visible structures beyond road.

Date: 1989, 1994, 1997 and 2002 Scale: 1'=500"	
Subject Property:	Undeveloped ungraded land with no visible structures and a paved road to the west.
North:	Undeveloped ungraded land with no visible structures.
South:	Undeveloped ungraded land with no visible structures.
East:	Developed with a single-family residence beyond an unpaved road.
West:	Undeveloped ungraded land with no visible structures beyond road.

Date: 2006, 2009, 2012 and 2016 Scale: 1'=500"	
Subject Property:	Undeveloped ungraded land with no visible structures besides a small concrete pad near the center of the site and a paved road to the west and an unpaved road to the east.
North:	Undeveloped land and residences beyond an unpaved road.
South:	Undeveloped graded land with no visible structures.
East:	Developed with a single-family residence beyond an unpaved road.
West:	Developed with a single-family residential development beyond road.

Copies of aerial photographs are included in Appendix B of this report.

3.2 Fire Insurance Maps

Partner reviewed the collection of Sanborn Fire insurance maps from Environmental Data Resources (EDR) in July 2021. Sanborn map coverage was not available for the subject property.

A copy of the "No Coverage" document is included in Appendix B of this report.

3.3 City Directories

Partner reviewed historical city directories obtained from Environmental Data Resources (EDR) in July 2021 for past names and businesses that were listed for the subject property and adjacent properties. The findings are presented in the following table:

City Directory Search for APNs 330-180-010 and 330-180-046 (Subject Property)

Year(s)	Occupant Listed
1971-2019	No listings of any addresses that could be associated with the subject property

Based on the city directory review, no environmentally sensitive listings were identified for the subject property.

City Directory Search for Adjacent Properties

Year(s)	Occupant Listed
1971-2017	No listings of any adjacent addresses

Based on the city directory review, no environmentally sensitive listings were identified for the adjacent property addresses.

Copies of reviewed city directories are included in Appendix B of this report.

3.4 Historical Topographic Maps

Partner reviewed historical topographic maps obtained from Environmental Data Resources (EDR) in July 2021. The following observations were noted to be depicted on the subject property and adjacent properties during the topographic map review:

Date: 1901, 1942, 1943, 1947, 1953, 1973, 1979 and 2012

Subject Property:	Undeveloped land
North:	Undeveloped
South:	Undeveloped
East:	Undeveloped
West:	Undeveloped beyond road

Copies of reviewed topographic maps are included in Appendix B of this report.

4.0 REGULATORY RECORDS REVIEW

4.1 Regulatory Agencies

4.1.1 State Department

Regulatory Agency Data	
Name of Agency:	California Department of Toxic Substances Control (DTSC)
Point of Contact:	On-line database
Agency Address:	www.dtsc.ca.gov
Agency Phone Number:	NA
Date of Contact:	July 27, 2021
Method of Communication:	On-line
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the DTSC database.

4.1.2 Health Department

Regulatory Agency Data	
Name of Agency:	Riverside County Environmental Health Department (RCEHD)
Point of Contact:	Ms. Suzanne Cauffiel
Agency Phone Number:	(951) 358-5055
Date of Contact:	July 27, 2021
Method of Communication:	Telephone
Summary of Communication:	This department has file information relating to USTs and hazardous materials and wastes dating back to as far as 1986. According to RCEHD representative Ms. Suzanne Cauffiel, a charge of $79 per unique site address is charged to research for environmental records and that the processing time can take between two to four weeks. This municipality no longer allows public access to municipal files for research purposes, and files or documents are not *readily available* or *reasonably ascertainable* without these excessive fees or charges, which is beyond the scope of this *Report*. Due to the absence of addresses, no records are researchable.

4.1.3 Fire Department

Regulatory Agency Data	
Name of Agency:	Riverside County Fire Prevention (RCFP)
Point of Contact:	Mr. Walter Brandes
Agency Address:	210 W. San Jacinto Avenue, San Jacinto, California
Agency Phone Number:	(951) 940-6900
Date of Contact:	July 27, 2021
Method of Communication:	Telephone

Summary of Communication:	The RCFP files are not reasonably ascertainable for review; however, the Riverside County Environmental Health Department (RCEHD) is the lead agency for USTs and hazmat (see above).

4.1.4 Air Pollution Control Agency

Regulatory Agency Data	
Name of Agency:	Air Quality Management District (AQMD)
Agency Address:	AQMD.gov
Agency Phone Number:	NA
Date of Contact:	July 27, 2021
Method of Communication:	On-line
Summary of Communication:	No Permits to Operate (PTO), Notices of Violation (NOV), or Notices to Comply (NTC) or the presence of AULs, dry cleaning machines, or USTs were on file for the subject property with the AQMD.

4.1.5 Regional Water Quality Agency

Regulatory Agency Data	
Name of Agency:	Regional Water Quality Control Board (RWQCB)
Agency Address:	http://www.swrcb.ca.gov/rwqcb4/
Agency Phone Number:	NA
Method of Communication:	On-line
Date of Contact:	July 27, 2021
Summary of Communication:	No records regarding hazardous substance use, storage or releases, or the presence of USTs and AULs on the subject property were on file with the RWQCB.

4.1.6 Building Department

Regulatory Agency Data	
Name of Agency:	Menifee Building Department (MBD)
Point of Contact:	Molly Binnall
Agency Address:	29714 Haun Road, Menifee, California
Agency Phone Number:	(951) 672-6777
Date of Contact:	July 27, 2021
Method of Communication:	In Person
Summary of Communication:	Ms. Binnall indicated that no building permits or certificates of Occupancy were noted for the subject property as no address had yet been assigned.

4.1.7 Planning Department

Regulatory Agency Data

Name of Agency:	Menifee Planning Department (MPD)
Point of Contact:	Russell Brown
Agency Address:	29714 Haun Road, Menifee, California
Agency Phone Number:	(951) 672-6777
Date of Contact:	July 27, 2021
Method of Communication:	In Person
Summary of Communication:	According to records reviewed, the subject property is zoned Economic Development Corridor – Northern Gateway (EDC-NG) by the City of Menifee.

4.1.8 Oil & Gas Exploration

Regulatory Agency Data	
Name of Agency:	California Division of Oil, Gas and Geothermal Resources (DOGGR)
Agency Address:	http://maps.conservation.ca.gov/doms/
Agency Phone Number:	NA
Date of Contact:	July 27, 2021
Method of Communication:	On-line
Summary of Communication:	According to DOGGR, no oil or gas wells are located on or adjacent to the subject property.

4.1.9 Assessor's Office

Regulatory Agency Data	
Name of Agency:	Riverside County Assessor (RCA)
Agency Address:	http://www.asrclkrec.com/Assessor/AssessorServices.aspx
Agency Phone Number:	NA
Date of Contact:	July 27, 2021
Method of Communication:	On-line
Summary of Communication:	According to records reviewed, the subject property is identified by Assessor Parcel Numbers (APNs) 330-180-010 and 046, totaling 8.72 acres, and ownership has been vested in the current owner since at least 2018.

4.2 Mapped Database Records Search

Information from standard federal, state, county, and city environmental record sources was provided by Environmental Data Resources, Inc. (EDR). Data from governmental agency lists are updated and integrated into one database, which is updated as these data are released. The information contained in this report was compiled from publicly available sources and the locations of the sites are plotted utilizing a geographic information system, which geocodes the site addresses. The accuracy of the geocoded locations is approximately +/-300 feet.

Using the ASTM definition of migration, Partner considers the migration of hazardous substances or petroleum products in any form onto the subject property during the evaluation of each site listed on the radius report, which includes solid, liquid, and vapor.

4.2.1 Regulatory Database Summary

Radius Report Data				
Database	**Search Radius (mile)**	**Subject Property**	**Adjacent Properties**	**Sites of Concern**
Federal NPL or Delisted NPL Site	1.00	N	N	N
Federal CERCLIS Site	0.50	N	N	N
Federal CERCLIS-NFRAP Site	0.50	N	N	N
Federal RCRA CORRACTS Facility	1.00	N	N	N
Federal RCRA TSDF Facility	0.50	N	N	N
Federal RCRA Generators Site (LQG, SQG, CESQG)	0.25	N	**Y**	N
Federal IC/EC Registries	0.50	N	N	N
Federal ERNS Site	Subject Property	N	N	N
State/Tribal Equivalent NPL	1.00	N	N	N
State/Tribal Equivalent CERCLIS	1.00	N	N	N
State/Tribal Landfill/Solid Waste Disposal Site	0.50	N	N	N
State/Tribal Leaking Storage Tank Site	0.50	N	N	N
State/Tribal Registered Storage Tank Sites (UST/AST)	0.25	N	N	N
State/Tribal Voluntary Cleanup Sites (VCP)	0.50	N	N	N
State/Tribal Spills	0.50	N	N	N
Federal Brownfield Sites	0.50	N	N	N
State Brownfield Sites	0.50	N	N	N
EDR MGP	Varies	N	N	N
EDR US Hist Auto Station	Varies	N	N	N
EDR US Hist Cleaners	Varies	N	N	N

4.2.2 Subject Property Listings

The subject property is not identified in the regulatory database report.

4.2.3 Adjacent Property Listings

The adjacent property to the north is identified as a RCRA NonGen site in the regulatory database report, as discussed below:

- The property, identified as Norman Carmichael at 25151 Corsica Lane, is located adjacent to the north of the subject property. This site was verified to be a non-generator in 2020. No violations were reported. Based on the type of listing, this listing is not expected to represent a significant environmental concern and it is unlikely that a regulatory file review for this site would alter the findings of this assessment.

4.2.4 Sites of Concern Listings

No sites of concern are identified in the regulatory database report.

Based on the findings, vapor migration is not expected to represent a significant environmental concern at this time.

4.2.5 Orphan Listings

No orphan listings of concern are identified in the regulatory database report.

A copy of the regulatory database report is included in Appendix C of this report.

5.0 USER PROVIDED INFORMATION AND INTERVIEWS

In order to qualify for one of the *Landowner Liability Protections (LLPs)* offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the *Brownfields Amendments*), the *User* must conduct the following inquiries required by 40 CFR 312.25, 312.28, 312.29, 312.30, and 312.31. The *User* should provide the following information to the *environmental professional*. Failure to provide this information could result in a determination that *all appropriate inquiries* is not complete. The *User* is asked to provide information or knowledge of the following:

- Review Title and Judicial Records for Environmental Liens and AULs
- Specialized Knowledge or Experience of the User
- Actual Knowledge of the User
- Reason for Significantly Lower Purchase Price
- Commonly Known or *Reasonably Ascertainable* information
- Degree of Obviousness
- Reason for Preparation of this Phase I ESA

Fulfillment of these user responsibilities is key to qualification for the identified defenses to CERCLA liability. Partner requested our Client to provide information to satisfy User Responsibilities as identified in Section 6 of the ASTM guidance.

Pursuant to ASTM E1527-13, Partner requested the following site information from Danbe Real Estate Advisors (User of this report).

User Responsibilities				
Item	**Provided By User**	**Not Provided By User**	**Discussed Below**	**Does Not Apply**
AAI User Questionnaire			**X**	
Title Records, Environmental Liens, and AULs			**X**	
Specialized Knowledge			**X**	
Actual Knowledge			**X**	
Valuation Reduction for Environmental Issues			**X**	
Identification of Key Site Manager	**Section 5.1.3**			
Reason for Performing Phase I ESA	**Section 1.1**			
Prior Environmental Reports		**X**		
Other		**X**		

5.1 Interviews

5.1.1 Interview with Owner

The owner of the subject property since at least 2018, was not available to be interviewed at the time of the assessment.

5.1.2 Interview with Report User

Please refer to Section 5.2 below for information requested from the Report User. The information requested was not received prior to the issuance of this report. Because the Report User (Client) is a prospective purchaser, it is understood that the Report User would not have knowledge of the property that would significantly impact our ability to satisfy the objectives of this assessment. The lack of this information is not considered to represent a significant data gap.

5.1.3 Interview with Key Site Manager

Mark Bachli, site contact and developer, provided no information pertaining to any pending, threatened, or past litigation relevant to hazardous substances or petroleum products in, on, or from the subject property; any pending, threatened, or past administrative proceedings relevant to hazardous substances or petroleum products in, on, or from the subject property; or any notices from a governmental entity regarding any possible violation of environmental laws or possible liability relating to hazardous substances or petroleum products.

According to Mr. Bachli, the subject property is undeveloped land, but had no knowledge of its history.

5.1.4 Interviews with Past Owners, Operators and Occupants

Interviews with past owners, operators and occupants were not conducted since information regarding the potential for contamination at the subject property was obtained from other sources.

5.1.5 Interview with Others

As the subject property is not an abandoned property as defined in ASTM 1527-13, interview with others were not performed.

5.2 User Provided Information

5.2.1 Title Records, Environmental Liens, and AULs

Partner was not provided with title records or environmental lien and AUL information for review as part of this assessment.

5.2.2 Specialized Knowledge

No specialized knowledge of environmental conditions associated with the subject property was provided by the User at the time of the assessment.

5.2.3 Actual Knowledge of the User

No actual knowledge of any environmental lien or AULs encumbering the subject property or in connection with the subject property was provided by the User at the time of the assessment.

5.2.4 Valuation Reduction for Environmental Issues

No knowledge of valuation reductions associated with the subject property was provided by the User at the time of the assessment.

5.2.5 Commonly Known or Reasonably Ascertainable Information

The User did not provide information that is commonly known or *reasonably ascertainable* within the local community about the subject property at the time of the assessment.

5.2.6 Previous Reports and Other Provided Documentation

No previous reports or other pertinent documentation was provided to Partner for review during the course of this assessment.

6.0 SITE RECONNAISSANCE

The weather at the time of the site visit was sunny and clear. Refer to Section 1.5 for limitations encountered during the field reconnaissance and Sections 2.1 and 2.2 for subject property operations. The table below provides the site assessment details:

Site Assessment Data	
Site Assessment Performed By:	G. Rob Loomer
Site Assessment Conducted On:	July 27, 2021

The table below provides the subject property personnel interviewed during the field reconnaissance:

Site Visit Personnel for APNs 330-180-010 and 330-180-046 (Subject Property)			
Name	**Title/Role**	**Contact Number**	**Site Walk* Yes/No**
Mr. Mark Bachli	Developer	(310) 428-3302	No

No potential environmental concerns were identified during the onsite reconnaissance.

6.1 General Site Characteristics

6.1.1 Solid Waste Disposal

No evidence of illegal dumping of solid waste was observed during the Partner site reconnaissance.

6.1.2 Sewage Discharge and Disposal

No sanitary discharges were noted on the subject property. No wastewater treatment facilities or septic systems were observed or reported on the subject property.

6.1.3 Surface Water Drainage

Storm water is removed from the subject property primarily by sheet flow action across the open soil surfaces towards the public right of ways. The subject property is not currently connected to a municipal owned and maintained sewer system.

The subject property does not appear to be a designated wetland area, based on information obtained from the United States Fish & Wildlife Service; however, a comprehensive wetlands survey would be required in order to formally determine actual wetlands on the subject property. No surface impoundments, wetlands, natural catch basins, settling ponds, or lagoons are located on the subject property. No drywells were identified on the subject property.

6.1.4 Source of Heating and Cooling

No heating or cooling systems were noted.

6.1.5 Wells and Cisterns

No aboveground evidence of wells or cisterns was observed during the site reconnaissance.

6.1.6 Wastewater

No domestic wastewater systems were noted. No industrial process is currently performed at the subject property.

6.1.7 Septic Systems

No septic systems were observed or reported on the subject property.

6.1.8 Additional Site Observations

No additional general site characteristics were observed during the site reconnaissance.

6.2 Potential Environmental Hazards

6.2.1 Hazardous Substances and Petroleum Products Used or Stored at the Site

No hazardous substances or petroleum products were observed on the subject property during the site reconnaissance.

6.2.2 Aboveground & Underground Hazardous Substance or Petroleum Product Storage Tanks (ASTs/USTs)

No evidence of current or former ASTs or USTs was observed during the site reconnaissance.

6.2.3 Evidence of Releases

No spills, stains or other indications that a surficial release has occurred at the subject property were observed.

6.2.4 Polychlorinated Biphenyls (PCBs)

No potential PCB-containing equipment (transformers, oil-filled switches, hoists, lifts, dock levelers, hydraulic elevators, etc.) was observed on the subject property during Partner's reconnaissance.

6.2.5 Strong, Pungent or Noxious Odors

No strong, pungent or noxious odors were evident during the site reconnaissance.

6.2.6 Pools of Liquid

No pools of liquid were observed on the subject property during the site reconnaissance.

6.2.7 Drains, Sumps and Clarifiers

No drains, sumps, or clarifiers, other than those associated with storm water removal, were observed on the subject property during the site reconnaissance.

6.2.8 Pits, Ponds and Lagoons

No pits, ponds or lagoons were observed on the subject property.

6.2.9 Stressed Vegetation

No stressed vegetation was observed on the subject property.

6.2.10 Additional Potential Environmental Hazards

No additional environmental hazards, including landfill activities or radiological hazards, were observed.

6.3 Non-ASTM Services

6.3.1 Asbestos-Containing Materials (ACMs)

Asbestos is the name given to a number of naturally occurring, fibrous silicate minerals mined for their useful properties such as thermal insulation, chemical and thermal stability, and high tensile strength. The Occupational Safety and Health Administration (OSHA) regulation 29 CFR 1926.1101 requires certain construction materials to be presumed to contain asbestos, for purposes of this regulation. All thermal system insulation (TSI), surfacing material, and asphalt/vinyl flooring that are present in a building that have not been appropriately tested are "presumed asbestos-containing material" (PACM).

Due to the undeveloped nature of use of the subject property, ACMs were not considered within the scope of this assessment.

6.3.2 Lead-Based Paint (LBP)

Due to the undeveloped nature of use of the subject property, LBP was not considered within the scope of this assessment.

6.3.3 Radon

Radon is a colorless, odorless, naturally occurring, radioactive, inert, gaseous element formed by radioactive decay of radium (Ra) atoms. The US EPA has prepared a map to assist National, State, and local organizations to target their resources and to implement radon-resistant building codes. The map divides the country into three Radon Zones, according to the table below:

EPA Radon Zones		
EPA Zones	**Average Predicted Radon Levels**	**Potential**
Zone 1	Exceed 4.0 pCi/L	Highest
Zone 2	Between 2.0 and 4.0 pCi/L	Moderate
Zone 3	Less than 2.0 pCi/L	Low

It is important to note that the EPA has found homes with elevated levels of radon in all three zones, and the US EPA recommends site-specific testing in order to determine radon levels at a specific location. However, the map does give a valuable indication of the propensity of radon gas accumulation in structures.

Radon sampling was not conducted as part of this assessment. Review of the US EPA Map of Radon Zones places the subject property in Zone 3. Due to the undeveloped nature of use of the subject property, radon was not considered within the scope of this assessment.

6.3.4 Lead in Drinking Water

A public water system is not currently provided to the subject property.

6.3.5 Mold

Molds are microscopic organisms found virtually everywhere, indoors and outdoors. Mold will grow and multiply under the right conditions, needing only sufficient moisture (e.g.in the form of very high humidity, condensation, or water from a leaking pipe, etc.) and organic material (e.g., ceiling tile, drywall, paper, or natural fiber carpet padding).

No obvious indications of water damage or mold growth were observed during Partner's visual assessment.

6.4 Adjacent Property Reconnaissance

The adjacent property reconnaissance consisted of observing the adjacent properties from the subject property premises. No items of environmental concern were identified on the adjacent properties during the site assessment, including hazardous substances, petroleum products, ASTs, USTs, evidence of releases, PCBs, strong or noxious odors, pools of liquids, sumps or clarifiers, pits or lagoons, stressed vegetation, or any other potential environmental hazards.

7.0 FINDINGS AND CONCLUSIONS

Findings

A *recognized environmental condition (REC)* refers to the presence or likely presence of any hazardous substances or petroleum products in, on, or at a property: due to release to the environment; under conditions indicative of a release to the environment; or under conditions that pose a material threat of a future release to the environment. The following was identified during the course of this assessment:

- Partner did not identify any recognized environmental conditions during the course of this assessment.

A *controlled recognized environmental condition (CREC)* refers to a REC resulting from a past release of hazardous substances or petroleum products that has been addressed to the satisfaction of the applicable regulatory authority, with hazardous substances or petroleum products allowed to remain in place subject to the implementation of required controls. The following was identified during the course of this assessment:

- Partner did not identify any controlled recognized environmental conditions during the course of this assessment.

A *historical recognized environmental condition (HREC)* refers to a past release of any hazardous substances or petroleum products that has occurred in connection with the property and has been addressed to the satisfaction of the applicable regulatory authority or meeting unrestricted use criteria established by a regulatory authority, without subjecting the property to any required controls. The following was identified during the course of this assessment:

- Partner did not identify any historical recognized environmental conditions during the course of this assessment.

An *environmental issue* refers to environmental concerns identified by Partner, which do not qualify as RECs; however, warrant further discussion. The following was identified during the course of this assessment:

- Partner did not identify any environmental issues during the course of this assessment.

Conclusions, Opinions and Recommendations

Partner has performed a Phase I Environmental Site Assessment in conformance with the scope and limitations of ASTM Practice E1527-13 of APNs 330-180-010 and 330-180-046 in Menifee, Riverside County, California (the "subject property"). Any exceptions to, or deletions from, this practice are described in Section 1.5 of this report.

This assessment has revealed no evidence of recognized environmental conditions or environmental issues in connection with the subject property. Based on the conclusions of this assessment, Partner recommends no further investigation of the subject property at this time.

8.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

Partner has performed a Phase I Environmental Site Assessment of the property located at APNs 330-180-010 and 330-180-046 in Menifee, Riverside County, California in conformance with the scope and limitations of the protocol and the limitations stated earlier in this report. Exceptions to or deletions from this protocol are discussed earlier in this report.

By signing below, Partner declares that, to the best of our professional knowledge and belief, we meet the definition of *Environmental Professional* as defined in §312.10 of 40 CFR §312. Partner has the specific qualifications based on education, training, and experience to assess a *property* of the nature, history, and setting of the subject *property*. Partner has developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Prepared By:

DRAFT

G. Rob Loomer
Environmental Professional/Scientist

Reviewed By:

DRAFT

Sarah Vosovic
Senior Author

9.0 REFERENCES

Reference Documents

American Society for Testing and Materials, Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, ASTM Designation: E1527-13.

Department of Toxic Substances Control (DTSC) website; www.envirostor.dtsc.ca.gov/public/default.asp

Environmental Data Resources, Inc., EDR Aerial Photo Decade Package, July 2021

Environmental Data Resources, Inc., EDR City Directory Package, July 2021

Environmental Data Resources (EDR), Radius Report, July 2021

Environmental Data Resources, Inc., EDR Historical Sanborn Map report, July 2021

Environmental Data Resources, Inc., EDR Historical Topographic Map report, July 2021

Federal Emergency Management Agency, Federal Insurance Administration, National Flood Insurance Program, Flood Insurance Map, accessed via internet, July 2021

Soil Survey of Riverside County, California published by the U*.S. Department of Agriculture Natural Resources Service* (USDA NRS) and dated 1971

United States Geological Survey Topographic Map 2015, 7.5 minute series, accessed via internet, July 2021

United States Environmental Protection Agency, EPA Map of Radon Zones (Document EPA-402-R-93-071), accessed via the internet, July 2021

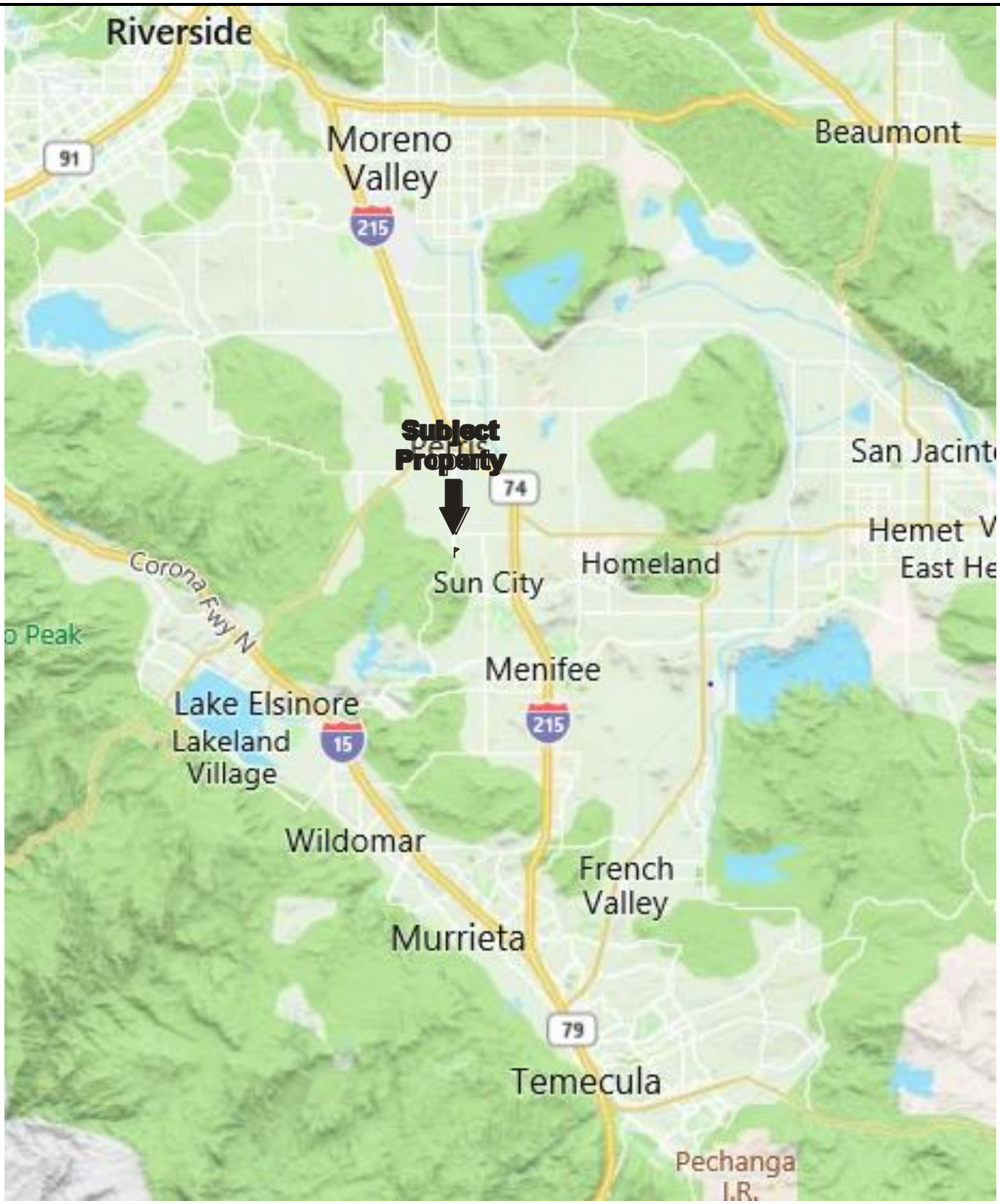
Water Resources Data Report for Riverside County, published by the *Eastern Municipal Water District* dated 2021

FIGURES

1 SITE LOCATION MAP

2 SITE PLAN

3 TOPOGRAPHIC MAP



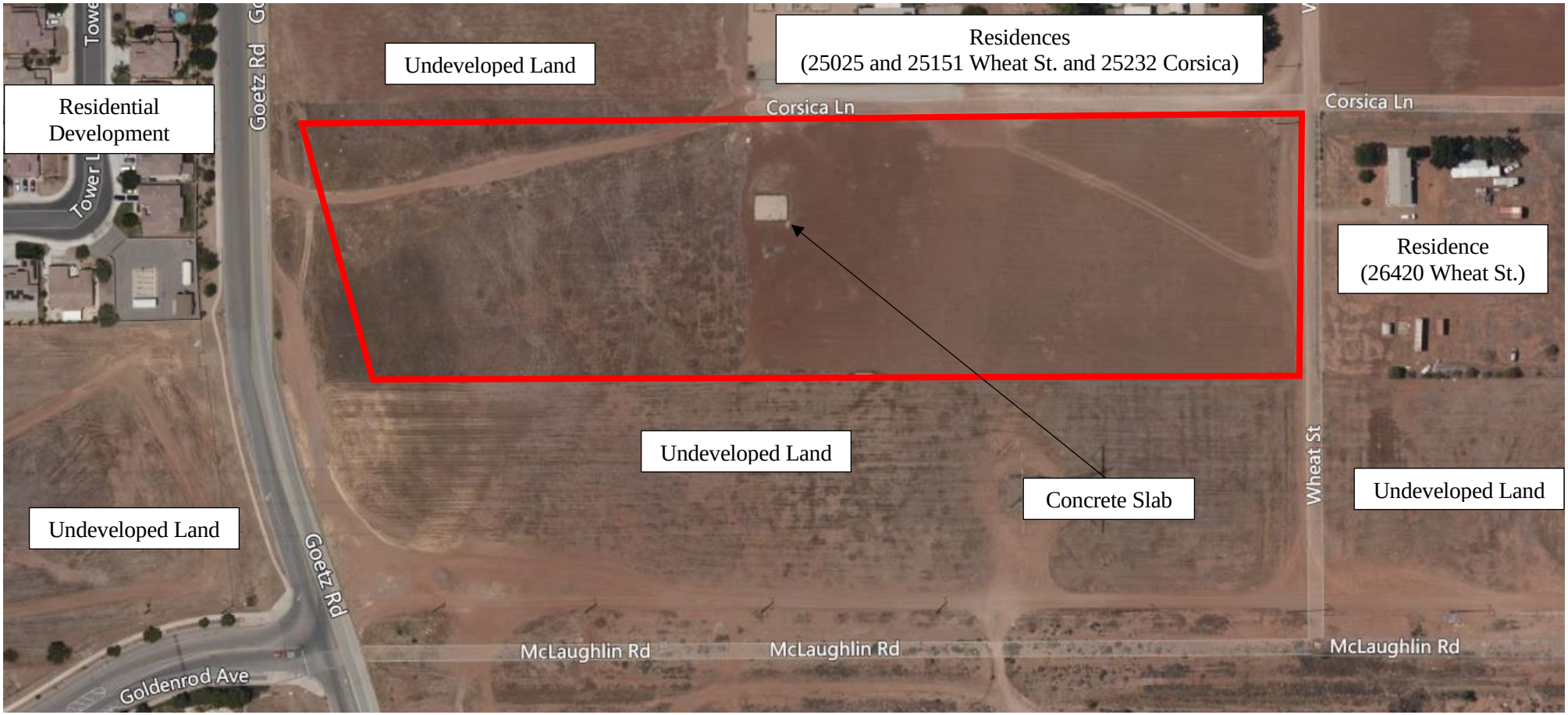
N

Drawing Not To Scale

FIGURE 1: SITE LOCATION MAP

Project No. 21-330210.1

PARTNER



N

KEY:
Subject Property

FIGURE 2: SITE PLAN
Project No. 21-330210.1

PARTNER



N

USGS 7.5 Minute *Romoland, Ca.* Quadrangle
Created: 2012

KEY:
Subject Property

FIGURE 3: TOPOGRAPHIC MAP
Project No. 21-330210.1

PARTNER

APPENDIX A: SITE PHOTOGRAPHS



1. North side of the subject property viewed from the east.



2. East side of the subject property viewed from the north.



3. Subject property viewed from the southeast.



4. Subject property viewed from the southwest.



5. West side of the subject property viewed from the north.



6. Subject property viewed from the northwest.



7. West side of the subject property viewed from the north.



8. Concrete slab near the center of the site looking west.



9. Concrete slab near the center of the site looking east.



10. Debris.



11. Debris.



12. Adjacent property to the north – Undeveloped and residences.



13. Adjacent property to the south – Undeveloped.



14. Adjacent property to the east – Undeveloped and residence.



15. Adjacent property to the west –Residences.

APPENDIX B: HISTORICAL/REGULATORY DOCUMENTATION

Menifee Assemblage

APNs 330-180-046 & 330-180-010

MENIFEE, CA 92585

Inquiry Number: 6595465.8

July 28, 2021

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

07/28/21

Site Name:

Menifee Assemblage
APNs 330-180-046 & 330-180-
MENIFEE, CA 92585
EDR Inquiry # 6595465.8

Client Name:

Partner Engineering and Science, Inc.
2154 Torrance Blvd, Suite 200
Torrance, CA 90501-0000
Contact: Roy Zamarripa

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*
1938	1"=500'	Flight Date: June 14, 1938	USDA
1949	1"=500'	Flight Date: May 08, 1949	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1961	1"=500'	Flight Date: June 14, 1961	USDA
1967	1"=500'	Flight Date: May 15, 1967	USDA
1974	1"=500'	Flight Date: November 06, 1974	USGS
1978	1"=500'	Flight Date: September 20, 1978	USDA
1985	1"=500'	Flight Date: July 28, 1985	USDA
1989	1"=500'	Flight Date: August 15, 1989	USDA
1994	1"=500'	Flight Date: June 01, 1994	USGS
1997	1"=500'	Acquisition Date: January 01, 1997	USGS/DOQQ
2002	1"=500'	Acquisition Date: January 01, 2002	USGS/DOQQ
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2016	1"=500'	Flight Year: 2016	USDA/NAIP

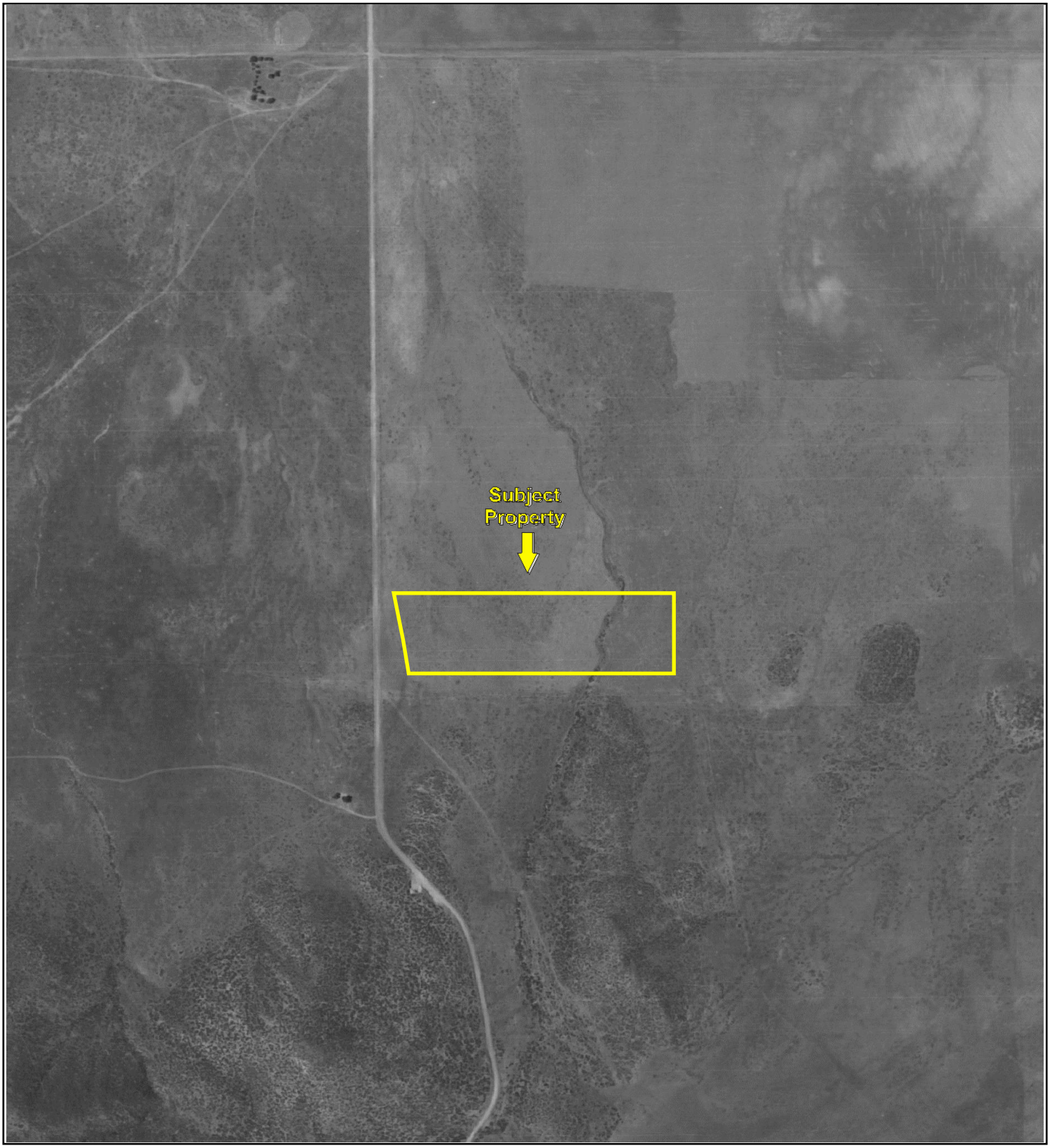
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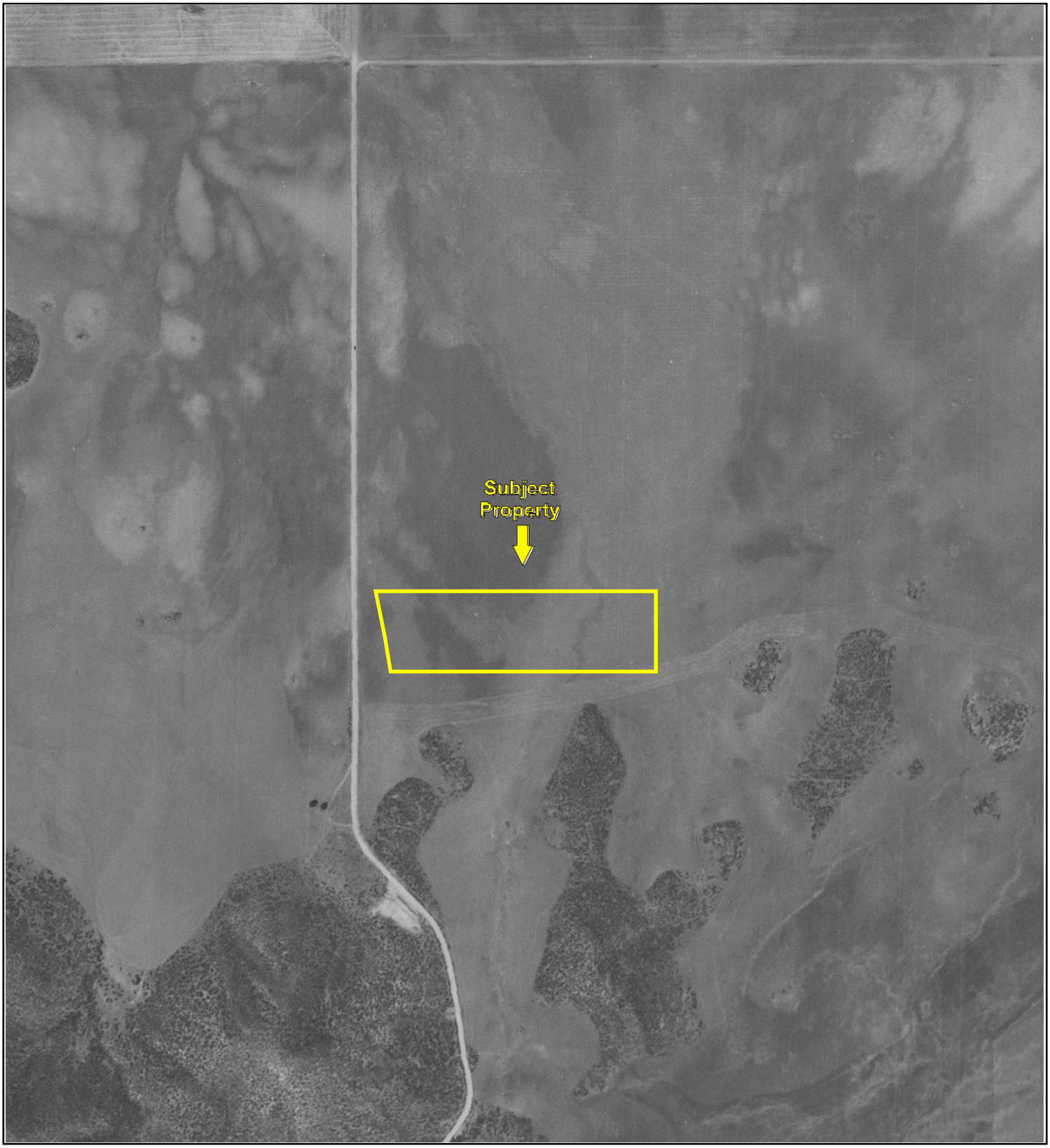
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500 1000 2000

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Key: Subject Property



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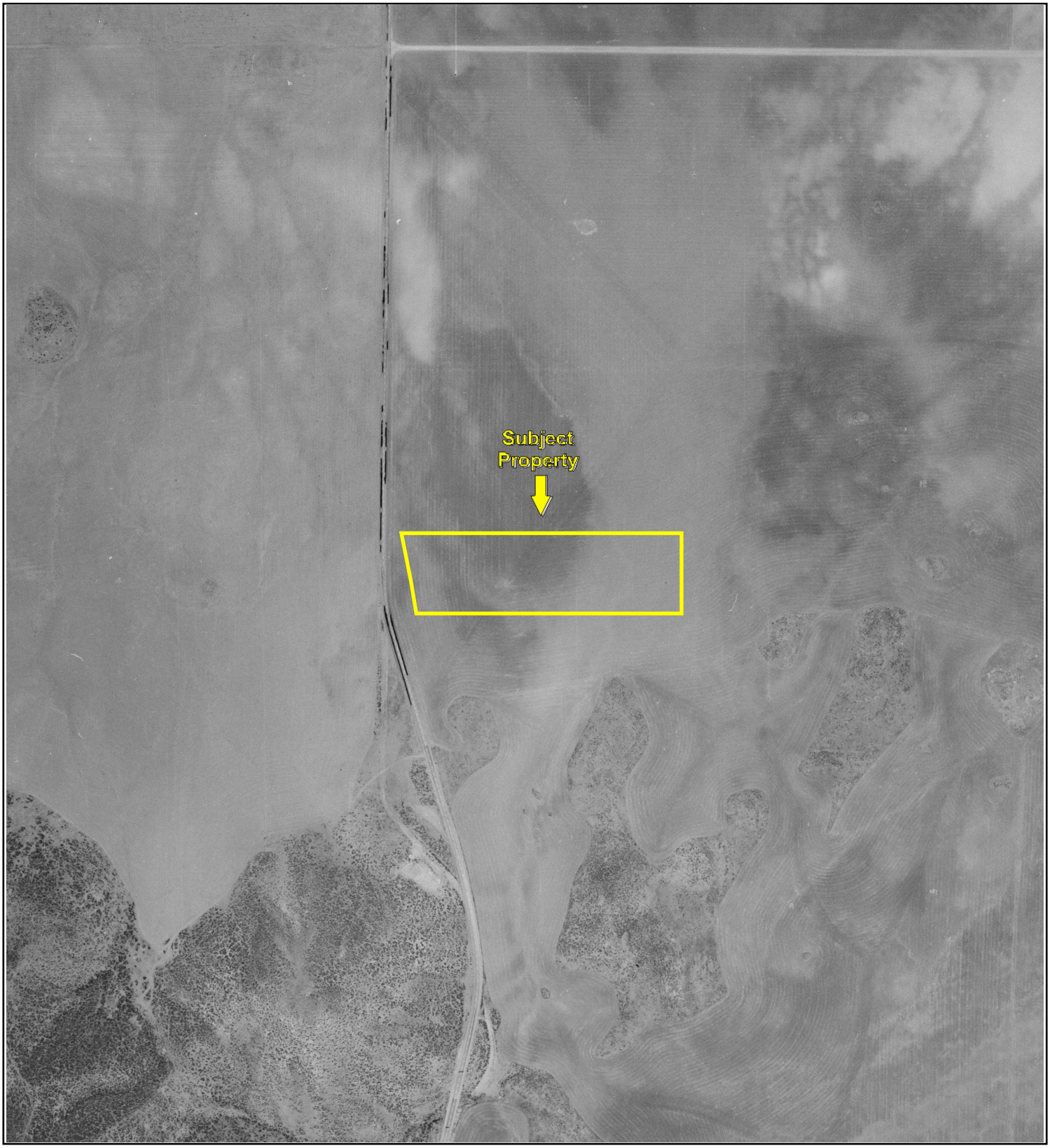
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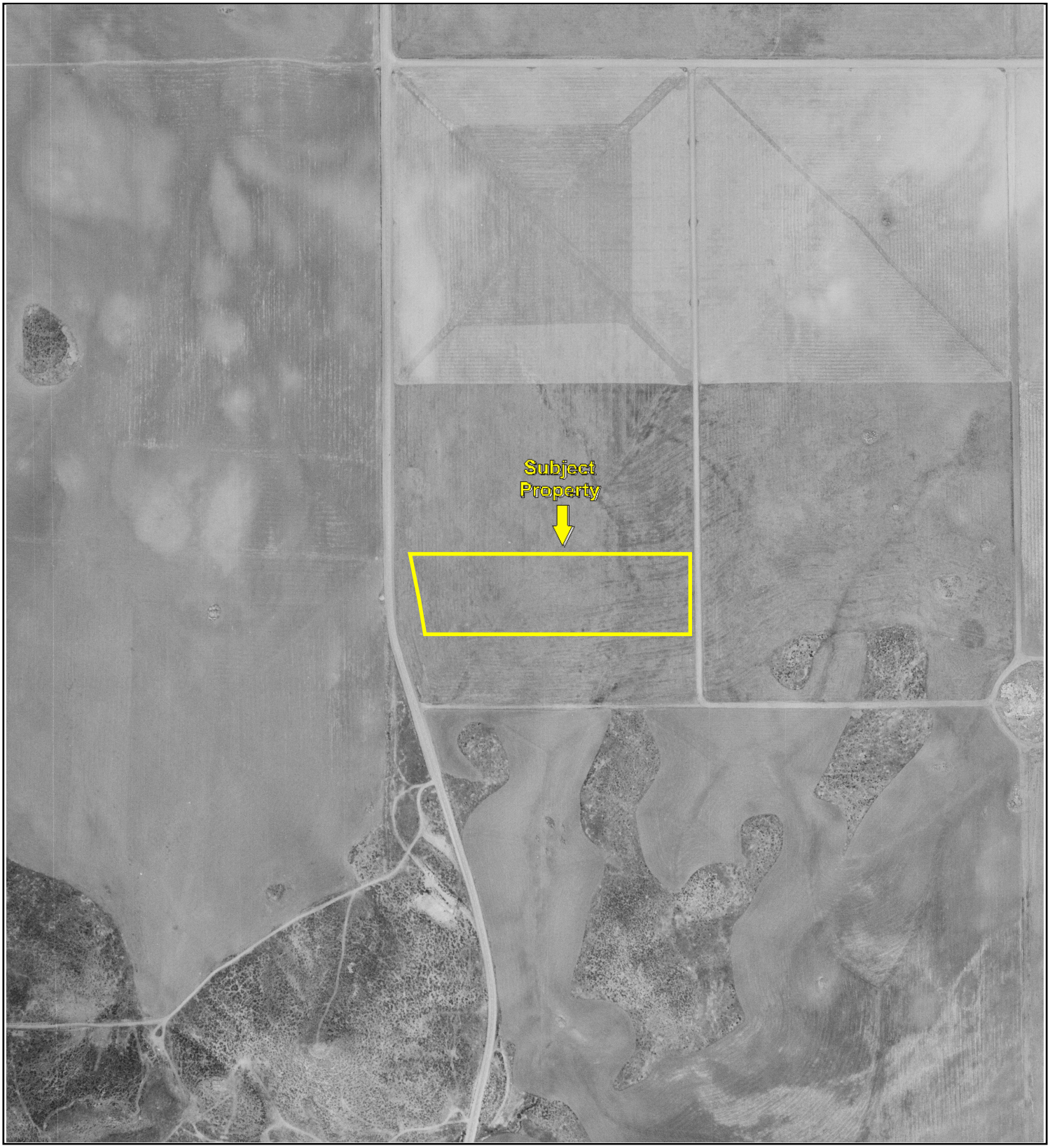
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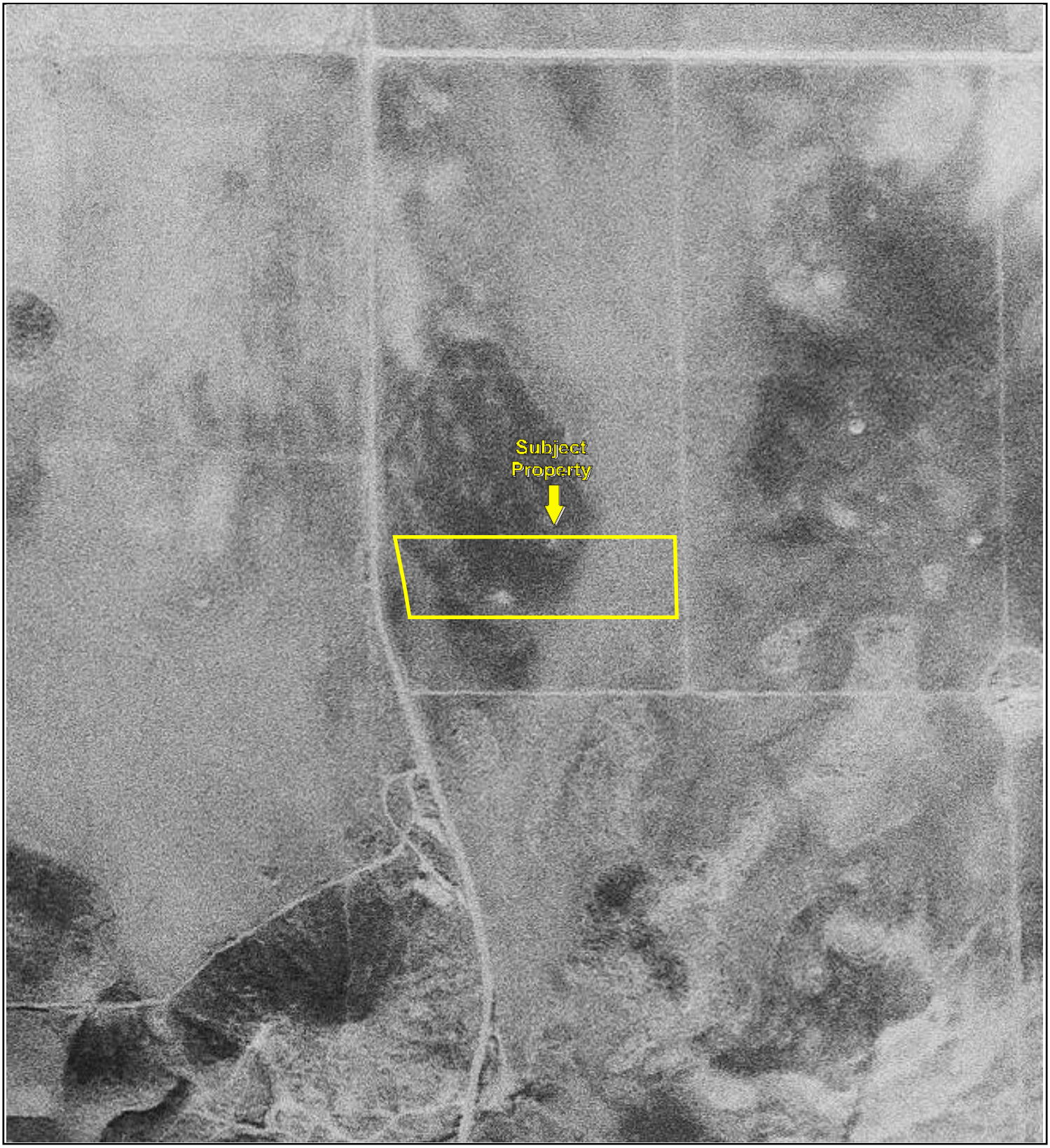
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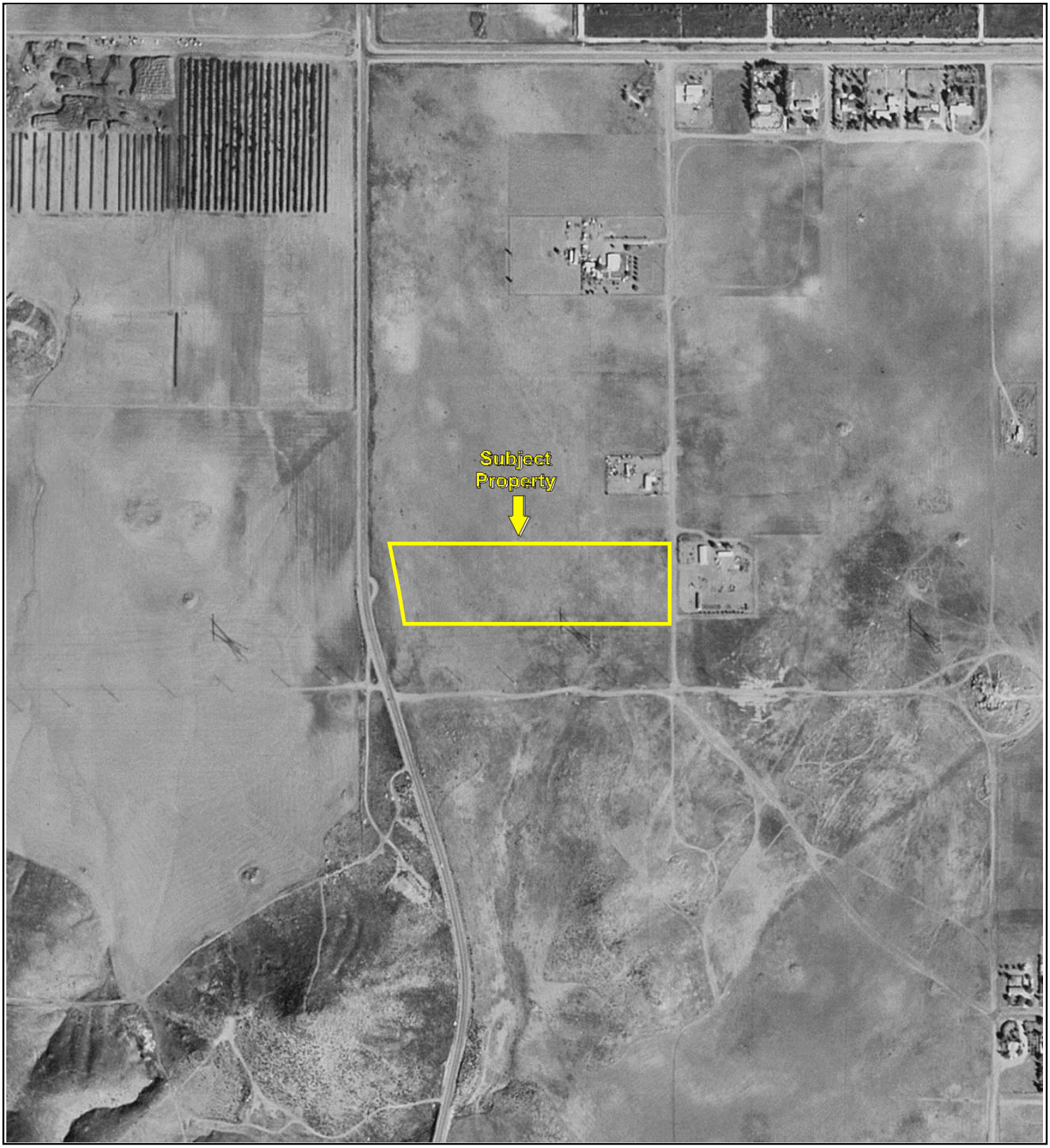
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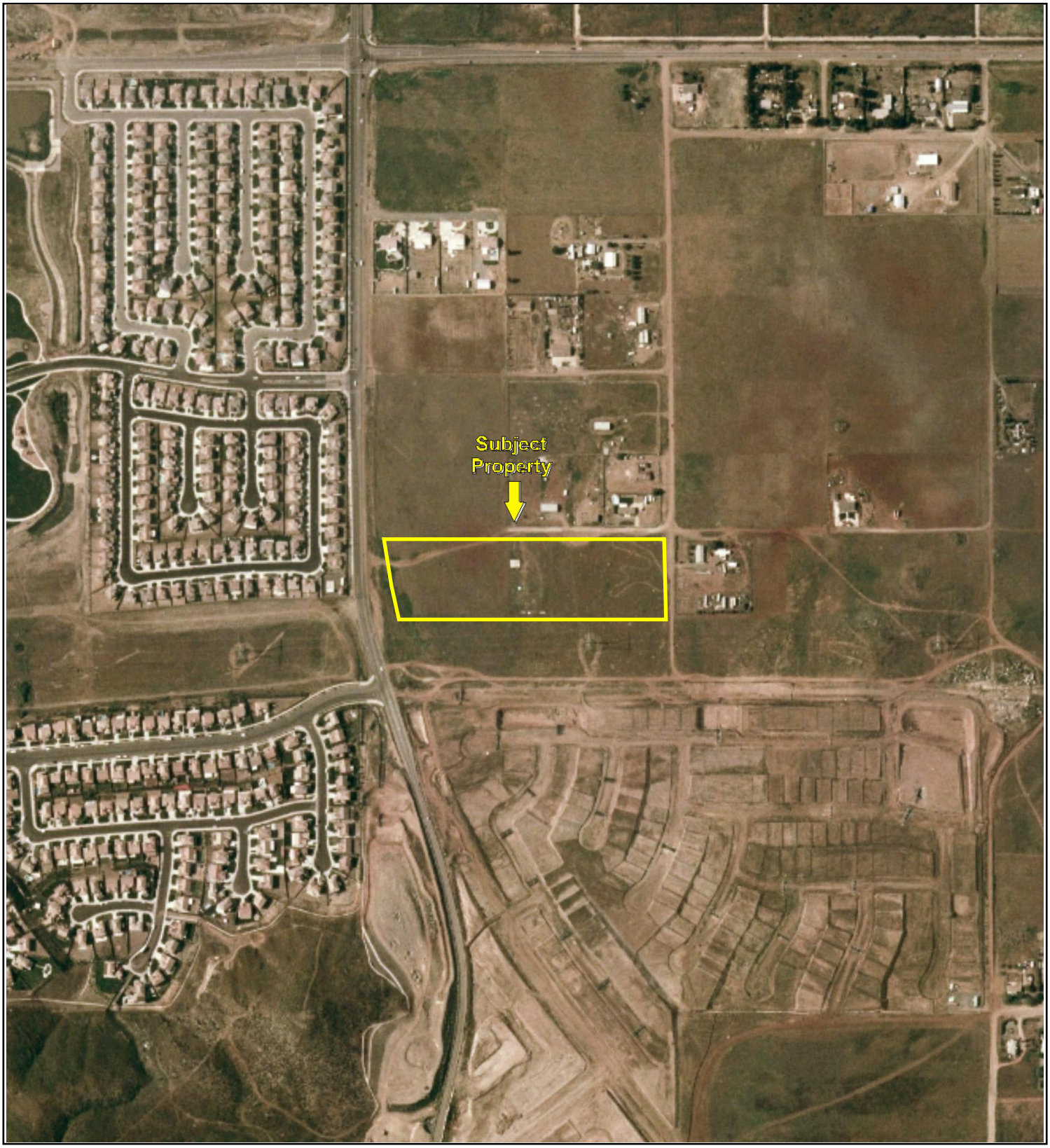
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Key: Subject Property

Menifee Assemblage
APNs 330-180-046 & 330-180-010
MENIFEE, CA 92585

Inquiry Number: 6595465.10
August 04, 2021

The EDR-City Directory Image Report

EDR® Environmental Data Resources Inc

6 Armstrong Road
Shelton, CT 06484
800.352.0050
www.edrnet.com

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Executive Summary

Findings

City Directory Images

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RECORD SOURCES

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The following research sources were consulted in the preparation of this report. A check mark indicates where information was identified in the source and provided in this report.

Year	Target Street	Cross Street	Source
2017	☐	☑	EDR Digital Archive
2014	☐	☑	EDR Digital Archive
2010	☐	☑	EDR Digital Archive
2005	☐	☑	EDR Digital Archive
2000	☐	☐	Haines Criss-Cross Directory
1995	☐	☐	Haines Criss-Cross Directory
1990	☐	☐	Haines Criss-Cross Directory
1985	☐	☐	Haines Criss-Cross Directory
1980	☐	☐	Haines Criss-Cross Directory
1976	☐	☐	Haines Criss-Cross Directory
1971	☐	☐	Haines Criss-Cross Directory

FINDINGS

TARGET PROPERTY STREET

APNs 330-180-046 & 330-180-010
MENIFEE, CA 92585

No Addresses Found

FINDINGS

CROSS STREETS

Year	*CD Image*	*Source*	
CORSICA LN			
2017	pg. A1	EDR Digital Archive	
2014	pg. A2	EDR Digital Archive	
2010	pg. A3	EDR Digital Archive	
2005	pg. A4	EDR Digital Archive	
2000	-	Haines Criss-Cross Directory	Street not listed in Source
1995	-	Haines Criss-Cross Directory	Street not listed in Source
1990	-	Haines Criss-Cross Directory	Street not listed in Source
1985	-	Haines Criss-Cross Directory	Street not listed in Source
1980	-	Haines Criss-Cross Directory	Street not listed in Source
1976	-	Haines Criss-Cross Directory	Street not listed in Source
1971	-	Haines Criss-Cross Directory	Street not listed in Source

City Directory Images

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

CORSICA LN 2017

25025 MACPHERSON, KENNETH R
25151 CARMICHAEL, NORMAN L
26342 SAVOIA, ROBERT

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

CORSICA LN 2014

25025 MACPHERSON, KENNETH R
25151 CARMICHAEL, NORMAN L
25232 MAGANA, MARILYN
26342 SAVOIA, ROBERT

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

CORSICA LN 2010

25025 MACPHERSON, KENNETH R
25151 CARMICHAEL, NORMAN L
26342 OCCUPANT UNKNOWN,

Target Street	Cross Street	Source
-	✓	EDR Digital Archive

CORSICA LN 2005

25025 OCCUPANT UNKNOWN,
25151 CARMICHAEL, NORMAN L

Menifee Assemblage

APNs 330-180-046 & 330-180-010

MENIFEE, CA 92585

Inquiry Number: 6595465.3

July 28, 2021

Certified Sanborn® Map Report

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07/28/21

Site Name:

Menifee Assemblage
APNs 330-180-046 & 330-180-
MENIFEE, CA 92585
EDR Inquiry # 6595465.3

Client Name:

Partner Engineering and Science, Inc.
2154 Torrance Blvd, Suite 200
Torrance, CA 90501-0000
Contact: Roy Zamarripa

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Certified Sanborn Results:

Certification # 7192-414A-9437

PO # 21-330210.1

Project 21-330210.1

UNMAPPED PROPERTY

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Sanborn® Library search results

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- ☑ University Publications of America
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Menifee Assemblage

APNs 330-180-046 & 330-180-010

MENIFEE, CA 92585

Inquiry Number: 6595465.4

July 28, 2021

EDR Historical Topo Map Report

with QuadMatch™

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

EDR Historical Topo Map Report

07/28/21

Site Name:

Menifee Assemblage
APNs 330-180-046 & 330-180-
MENIFEE, CA 92585
EDR Inquiry # 6595465.4

Client Name:

Partner Engineering and Science, Inc.
2154 Torrance Blvd, Suite 200
Torrance, CA 90501-0000
Contact: Roy Zamarripa

EDR Topographic Map Library has been searched by EDR and maps covering the target property location as provided by Partner Engineering and Science, Inc. were identified for the years listed below. EDR's Historical Topo Map Report is designed to assist professionals in evaluating potential liability on a target property resulting from past activities. EDRs Historical Topo Map Report includes a search of a collection of public and private color historical topographic maps, dating back to the late 1800s.

Search Results:

P.O.# 21-330210.1
Project: 21-330210.1

Coordinates:

Latitude:	33.737135 33° 44' 14" North
Longitude:	-117.221173 -117° 13' 16" West
UTM Zone:	Zone 11 North
UTM X Meters:	479512.43
UTM Y Meters:	3733032.61
Elevation:	1467.63' above sea level

Maps Provided:

1901
1942
1943
1947
1953
1973
1979
2012

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Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1901 Source Sheets



Elsinore
1901
30-minute, 125000

1942 Source Sheets



Perris
1942
15-minute, 62500
Aerial Photo Revised 1939



Murrieta
1942
15-minute, 62500
Aerial Photo Revised 1939

1943 Source Sheets

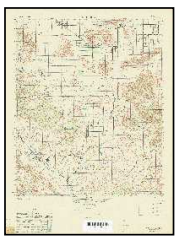


PERRIS
1943
15-minute, 62500



Murrieta
1943
15-minute, 62500
Aerial Photo Revised 1939

1947 Source Sheets

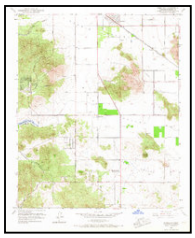


MURRIETA
1947
15-minute, 50000

Topo Sheet Key

This EDR Topo Map Report is based upon the following USGS topographic map sheets.

1953 Source Sheets

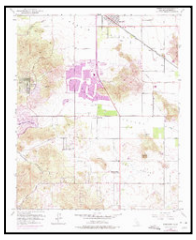


Romoland
1953
7.5-minute, 24000
Aerial Photo Revised 1951



Perris
1953
7.5-minute, 24000
Aerial Photo Revised 1951

1973 Source Sheets



Romoland
1973
7.5-minute, 24000
Aerial Photo Revised 1973



Perris
1973
7.5-minute, 24000
Aerial Photo Revised 1973

1979 Source Sheets



Romoland
1979
7.5-minute, 24000
Aerial Photo Revised 1976



Perris
1979
7.5-minute, 24000
Aerial Photo Revised 1978

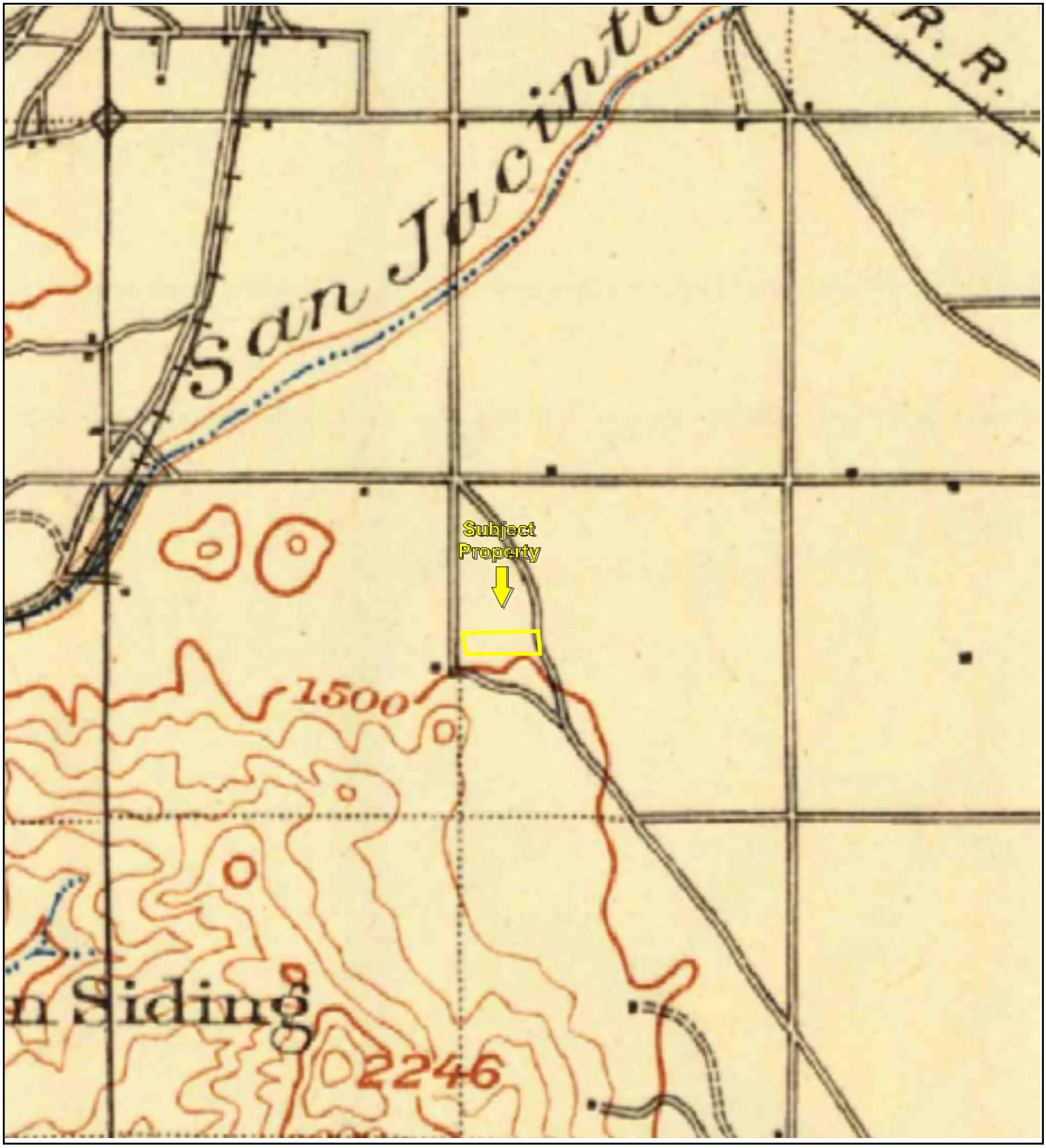
2012 Source Sheets



Romoland
2012
7.5-minute, 24000



Perris
2012
7.5-minute, 24000

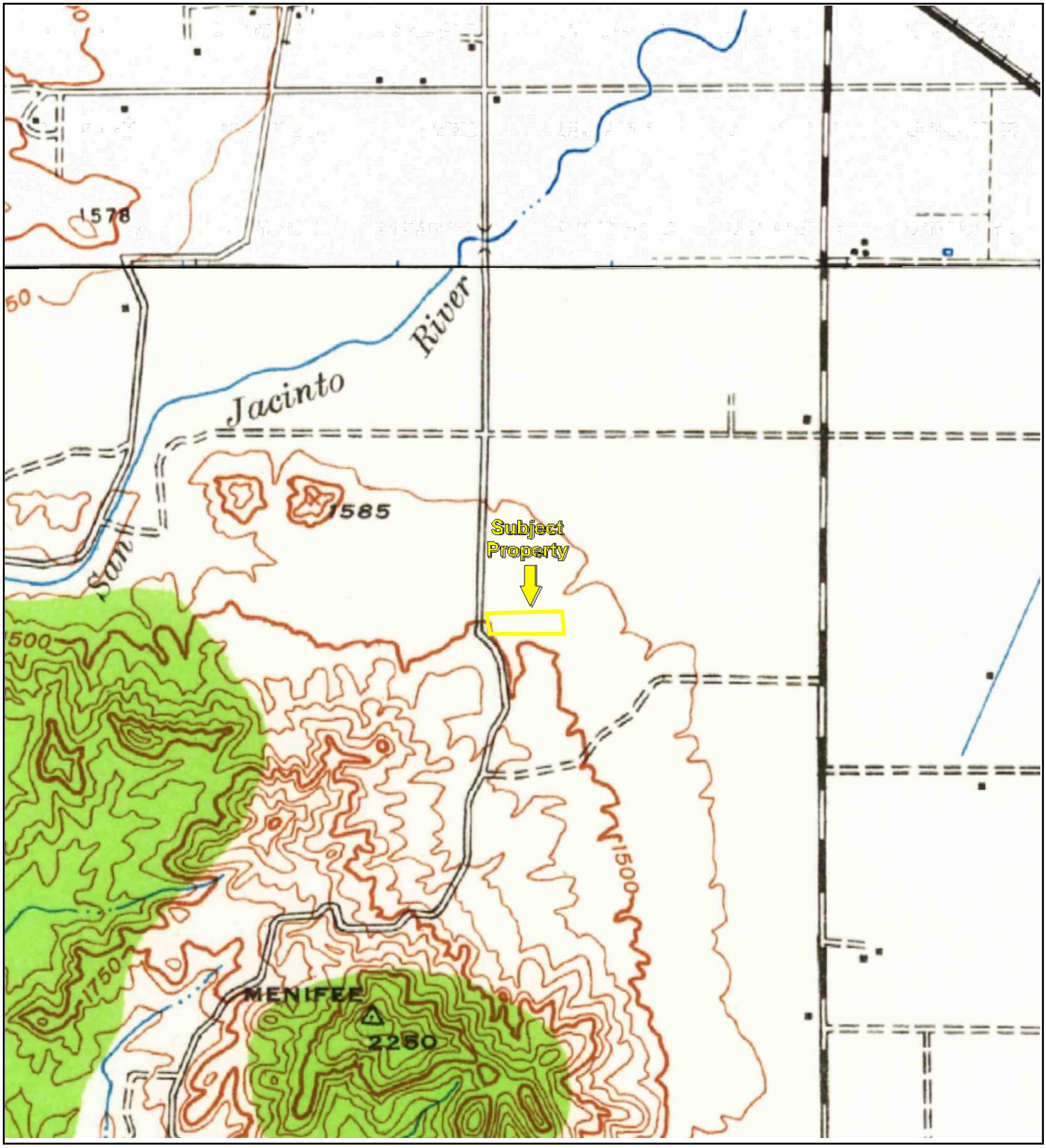


TP, Elsinore, 1901, 30-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

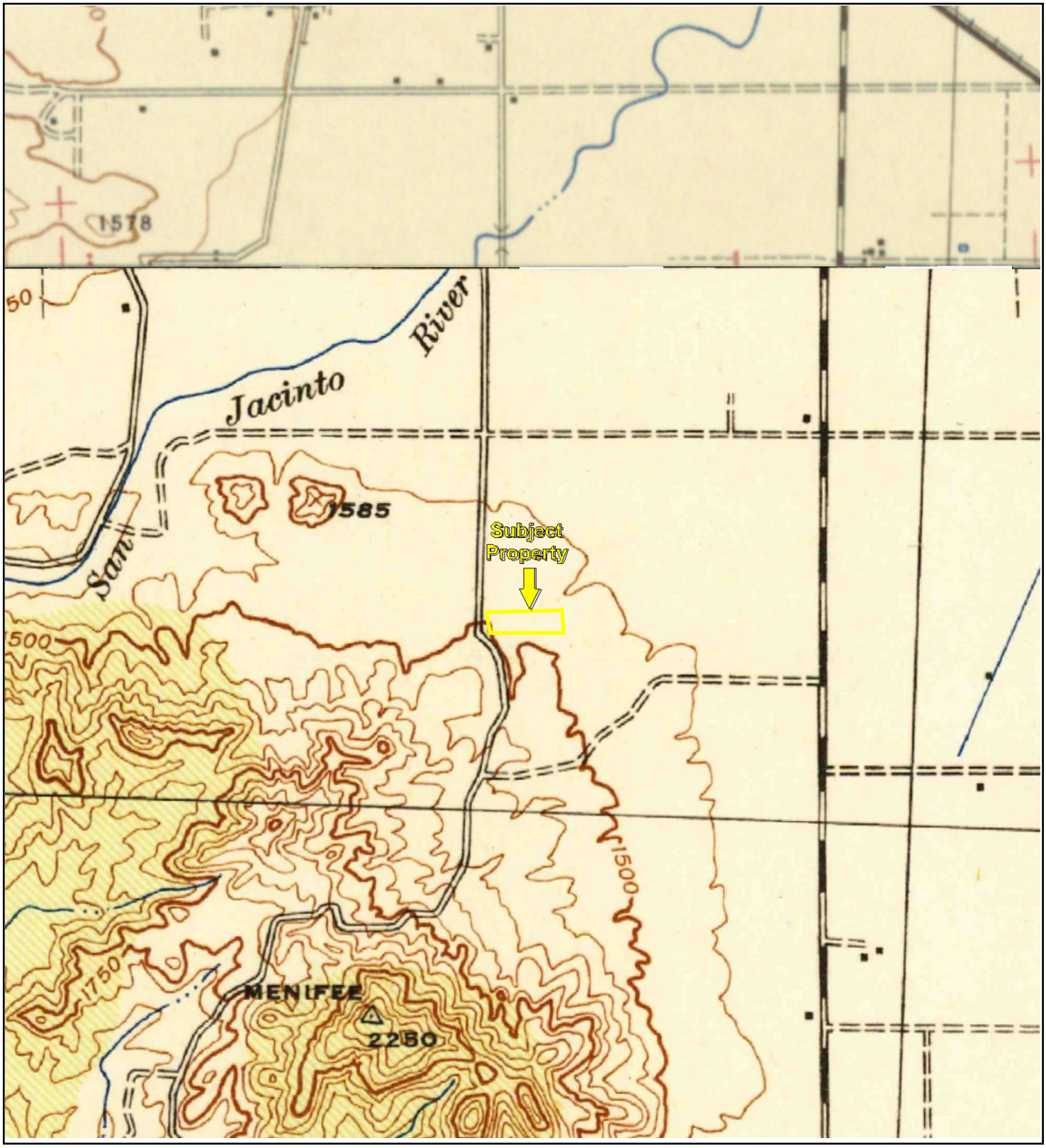


TP, Murrieta, 1942, 15-minute
NE, Perris, 1942, 15-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property



TP, Murrieta, 1943, 15-minute
NE, PERRIS, 1943, 15-minute

0 Miles 0.25 0.5 1 1.5

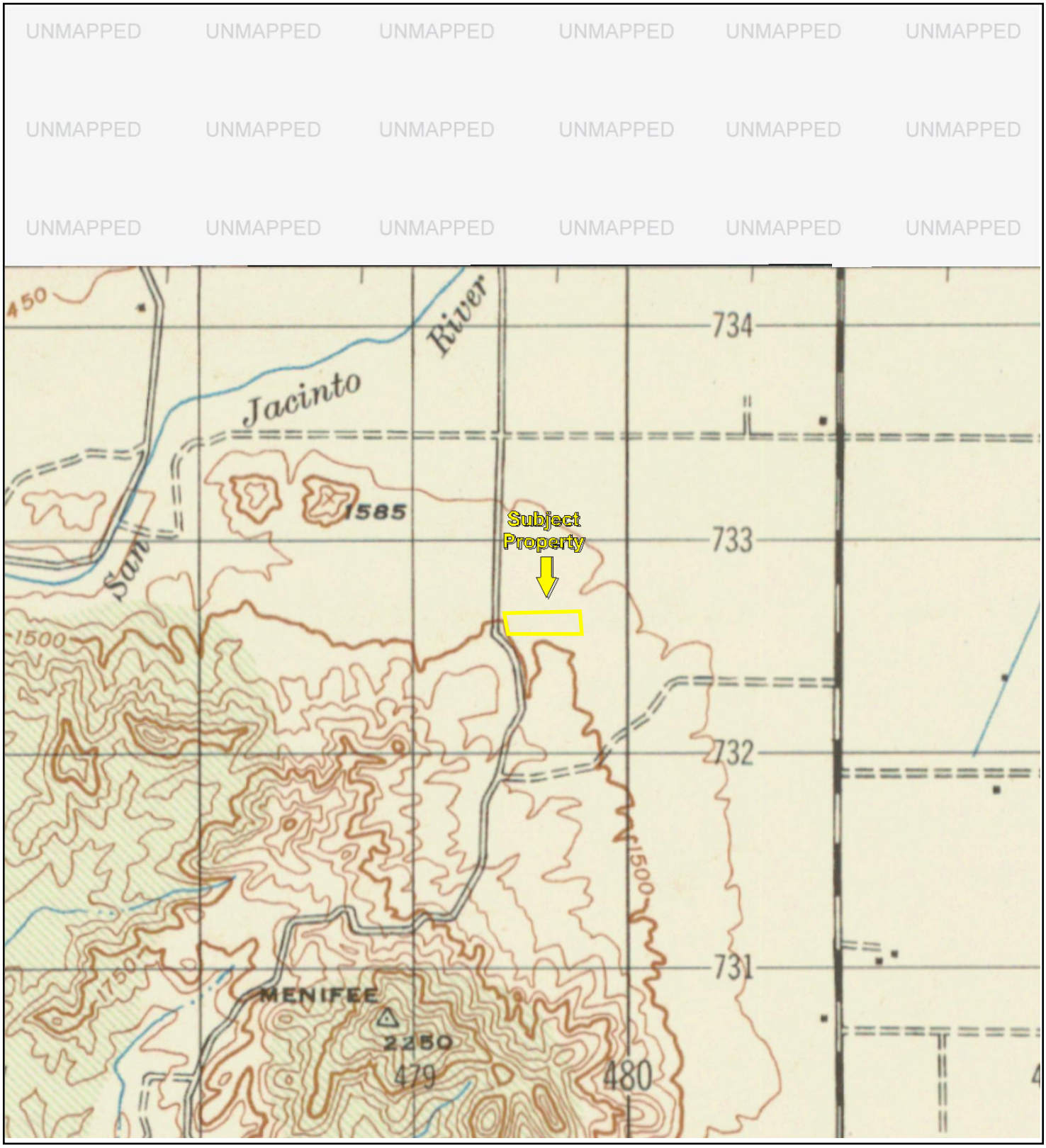
N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

PARTNER



TP, MURRIETA, 1947, 15-minute

0 Miles 0.25 0.5 1 1.5

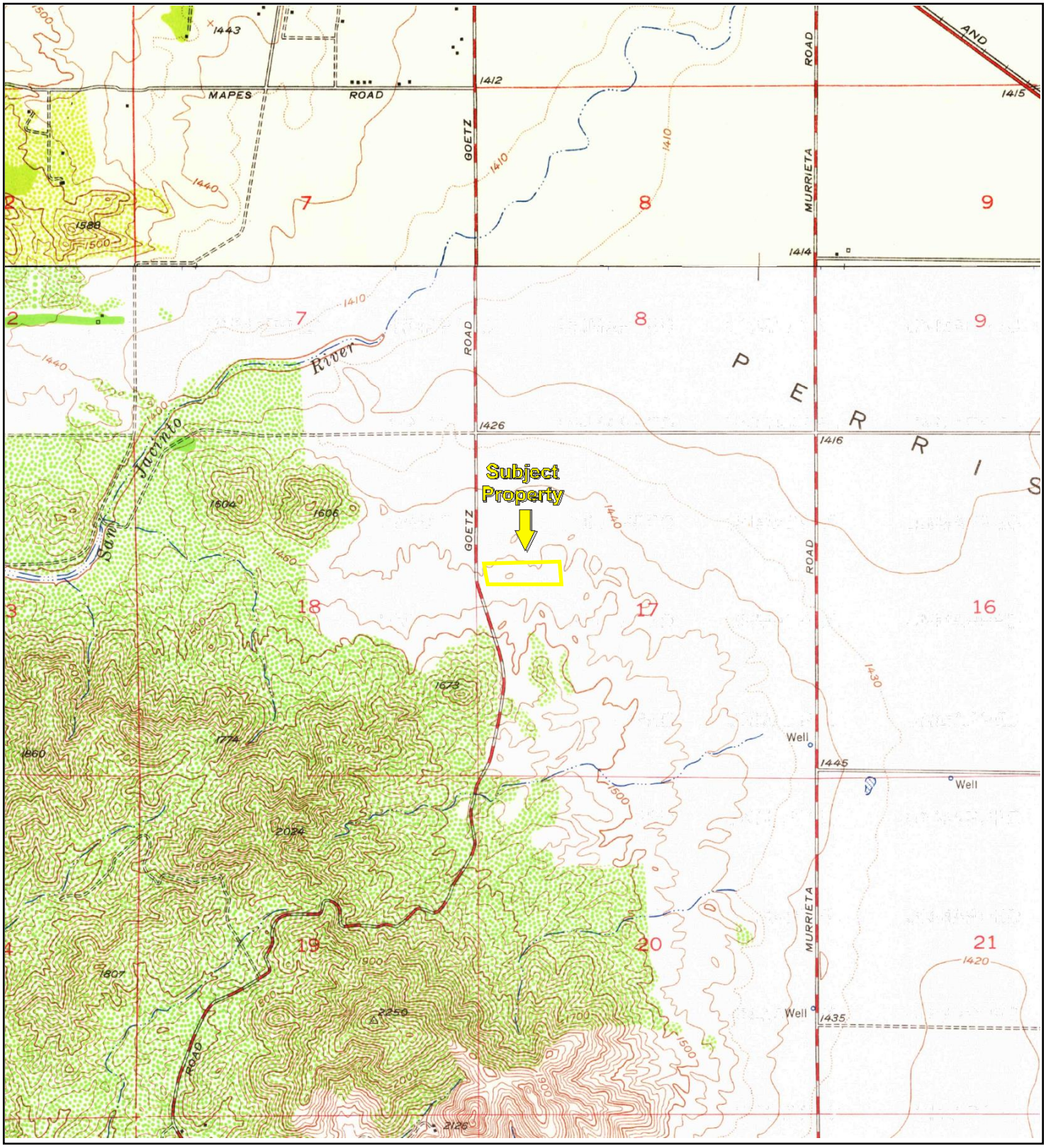
N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

PARTNER



TP, Romoland, 1953, 7.5-minute
N, Perris, 1953, 7.5-minute

0 Miles 0.25 0.5 1 1.5

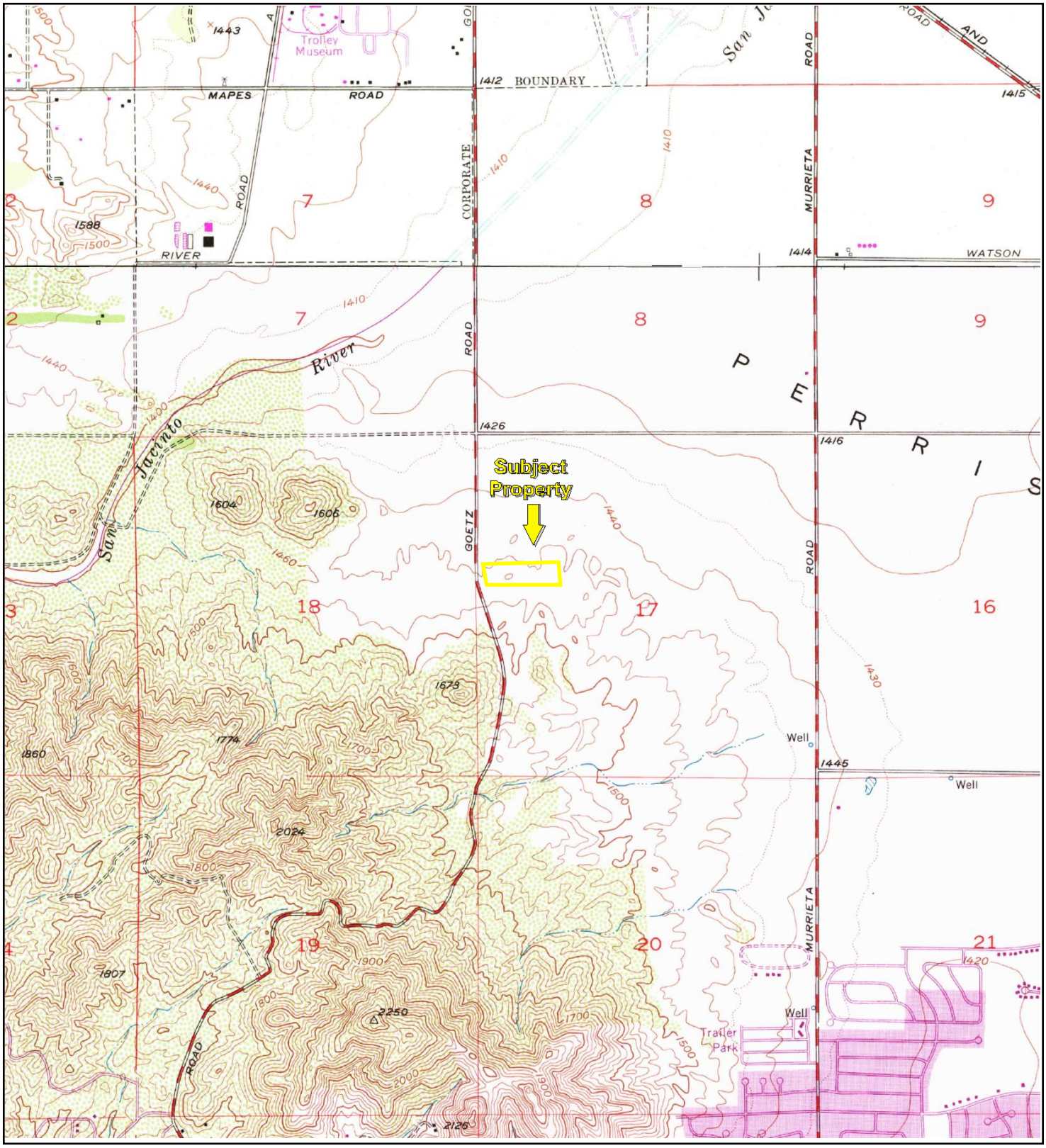
N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

PARTNER



TP, Romoland, 1973, 7.5-minute
N, Perris, 1973, 7.5-minute

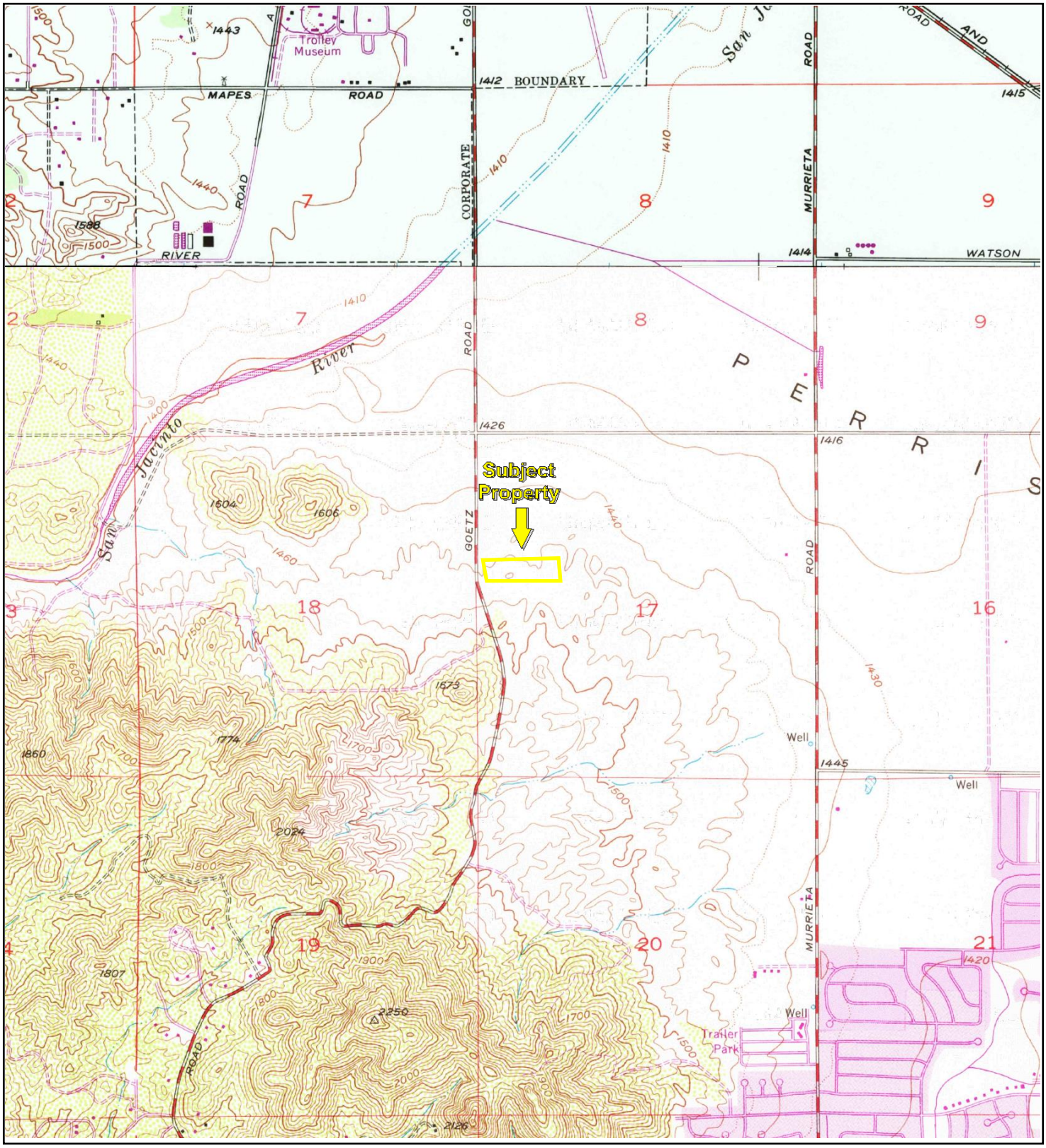
0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

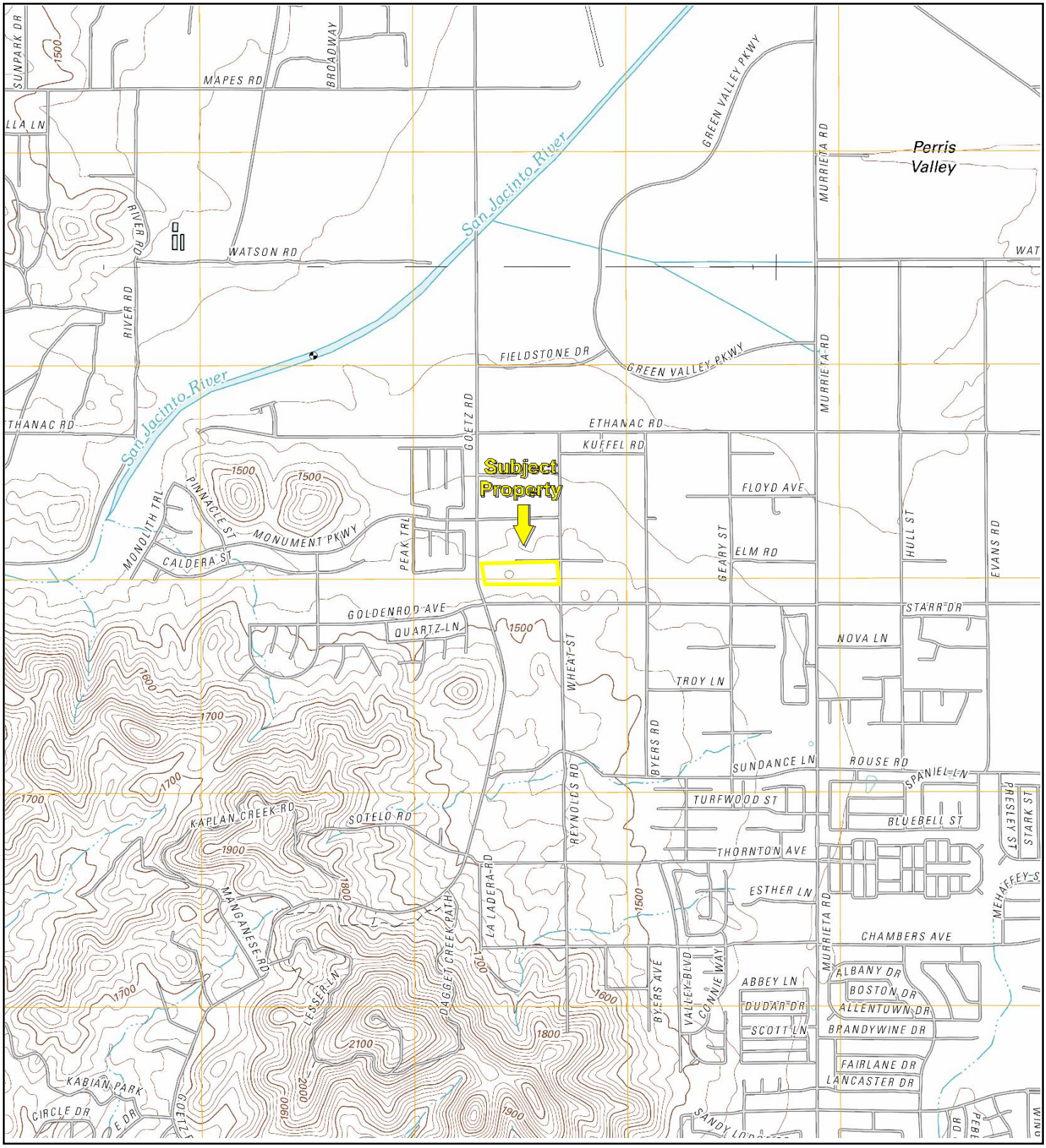


TP, Romoland, 1979, 7.5-minute
N, Perris, 1979, 7.5-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property



TP, Romoland, 2012, 7.5-minute
N, Perris, 2012, 7.5-minute

0 Miles 0.25 0.5 1 1.5

N

Key: Subject Property

APPENDIX B: Topographic Maps

Project No. 21-330210.1

PARTNER



No PSA or LOI

LOI submitted

PSA submitted

In Escrow

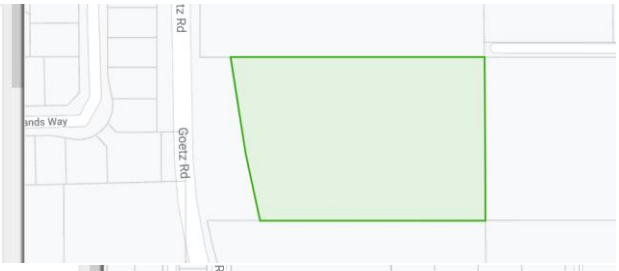
Property ID Number (PIN/APN): 330180046



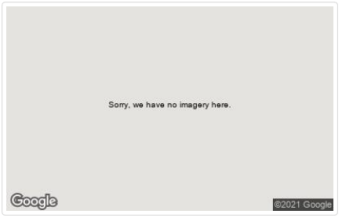
General Information

Property ID Number (PIN/APN)	330180046
Property Address	- No Situs -
Property Type	HOMESITE/1-4.9 ACRES
TAG	026-199 MENIFEE
Acreage	3.870

View Aerial Images | View Assessor Map



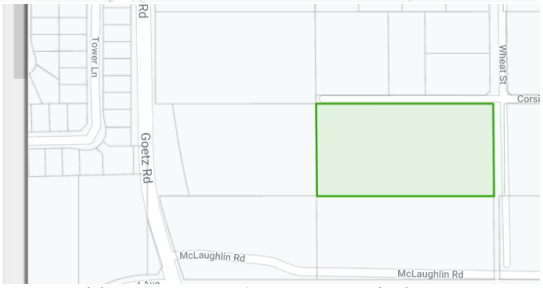
Property ID Number (PIN/APN): 330180010

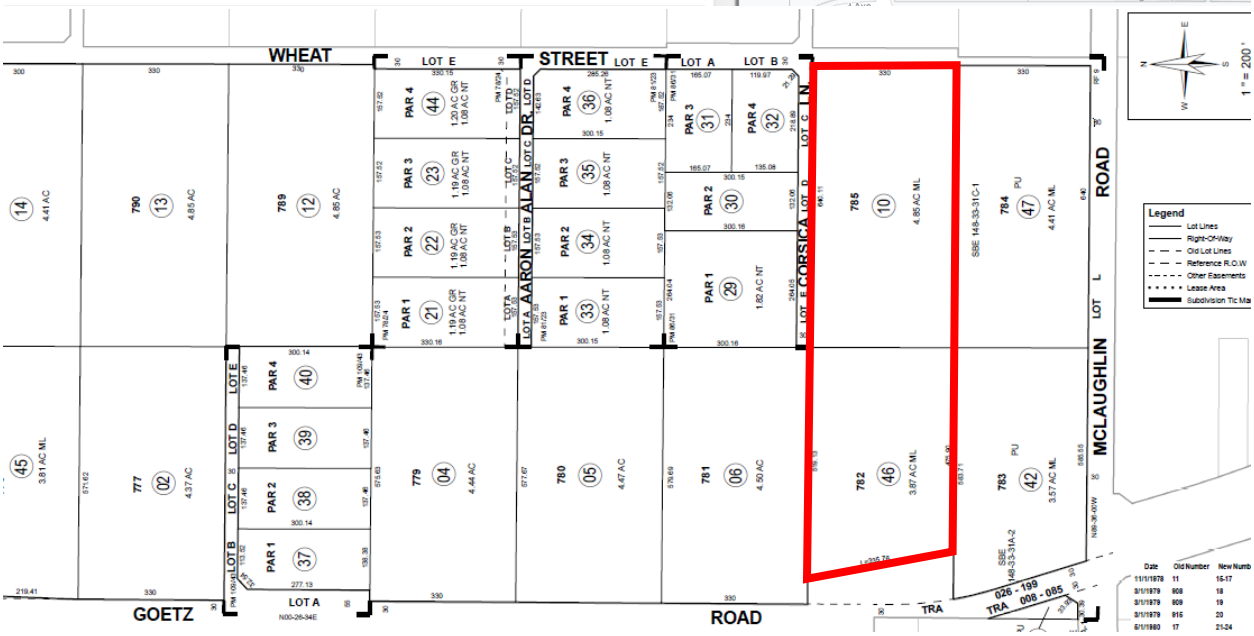


General Information

Property ID Number (PIN/APN)	330180010
Property Address	- No Situs -
Property Type	HOMESITE/1-4.9 ACRES
TAG	026-199 MENIFEE
Acreage	4.850

View Aerial Images | View Assessor Map





APPENDIX C: REGULATORY DATABASE REPORT

PARTNER

Menifee Assemblage
APNs 330-180-046 & 330-180-010
MENIFEE, CA 92585

Inquiry Number: 6595465.2s
July 28, 2021

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Map Findings Summary	4
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GEOCHECK ADDENDUM

Physical Setting Source Addendum	A-1
Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-15
Physical Setting Source Map Findings	A-17
Physical Setting Source Records Searched	PSGR-1

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

APNS 330-180-046 & 330-180-010
MENIFEE, CA 92585

COORDINATES

Latitude (North):	33.7371350 - 33° 44' 13.68''
Longitude (West):	117.2211730 - 117° 13' 16.22''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	479512.0
UTM Y (Meters):	3732839.0
Elevation:	1467 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
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
APNS 330-180-046 & 330-180-010
MENIFEE, CA 92585

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
1	NORMAN CARMICHAEL	25151 CORSICA LANE	RCRA NonGen / NLR	Lower	64, 0.012, NE
2	JAMES LABAN	3821 JUNIPER LANE	RCRA NonGen / NLR	Higher	1177, 0.223, SSW
3	MONUMENT RANCH SITE	GOETZ ROAD / ETHANAC	ENVIROSTOR, SCH, CERS	Lower	1964, 0.372, NNW
4	NATIVE PLANT	202 ETHANAC	LUST, HIST CORTESE	Lower	1989, 0.377, NNE
5	ELEMENTARY SCHOOL NO	FENCE POST DRIVE/RAM	ENVIROSTOR, SCH	Higher	3519, 0.666, South

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-VSQG ---------- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---------- Land Use Control Information System

US ENG CONTROLS Engineering Controls Sites List
US INST CONTROLS Institutional Controls Sites List

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
CPS-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

VCP Voluntary Cleanup Program Properties
INDIAN VCP Voluntary Cleanup Priority Listing

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
SWRCY Recycler Database
HAULERS Registered Waste Tire Haulers Listing
INDIAN ODI Report on the Status of Open Dumps on Indian Lands
ODI Open Dump Inventory
DEBRIS REGION 9 Torres Martinez Reservation Illegal Dump Site Locations
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
CERS HAZ WASTE ---- CERS HAZ WASTE
US CDL ---- National Clandestine Laboratory Register
PFAS ---- PFAS Contamination Site Location Listing

Local Lists of Registered Storage Tanks

SWEEPS UST ---- SWEEPS UST Listing
HIST UST ---- Hazardous Substance Storage Container Database
CA FID UST ---- Facility Inventory Database
CERS TANKS ---- California Environmental Reporting System (CERS) Tanks

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

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
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
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
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System
HWTS	Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations

EXECUTIVE SUMMARY

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.

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 04/23/2021 has revealed that there are 2 ENVIROSTOR sites within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
ELEMENTARY SCHOOL NO Facility Id: 60000776 Status: Inactive - Withdrawn	***FENCE POST DRIVE/RAM***	***S 1/2 - 1 (0.666 mi.)***	***5***	***19***

Lower Elevation	Address	Direction / Distance	Map ID	Page
MONUMENT RANCH SITE Facility Id: 70000024 Status: No Further Action	***GOETZ ROAD / ETHANAC***	***NNW 1/4 - 1/2 (0.372 mi.)***	***3***	***14***

EXECUTIVE SUMMARY

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 is 1 LUST site within approximately 0.5 miles of the target property.

Lower Elevation	Address	Direction / Distance	Map ID	Page
NATIVE PLANT	***202 ETHANAC***	***NNE 1/4 - 1/2 (0.377 mi.)***	***4***	***18***

Database: LUST REG 8, Date of Government Version: 02/14/2005
Facility Status: Case Closed
Global ID: T0606500254

ADDITIONAL ENVIRONMENTAL RECORDS

Other Ascertainable Records

RCRA NonGen / NLR: 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.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 03/22/2021 has revealed that there are 2 RCRA NonGen / NLR sites within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
JAMES LABAN	3821 JUNIPER LANE	SSW 1/8 - 1/4 (0.223 mi.)	2	11

Lower Elevation	Address	Direction / Distance	Map ID	Page
NORMAN CARMICHAEL	25151 CORSICA LANE	NE 0 - 1/8 (0.012 mi.)	1	9

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.

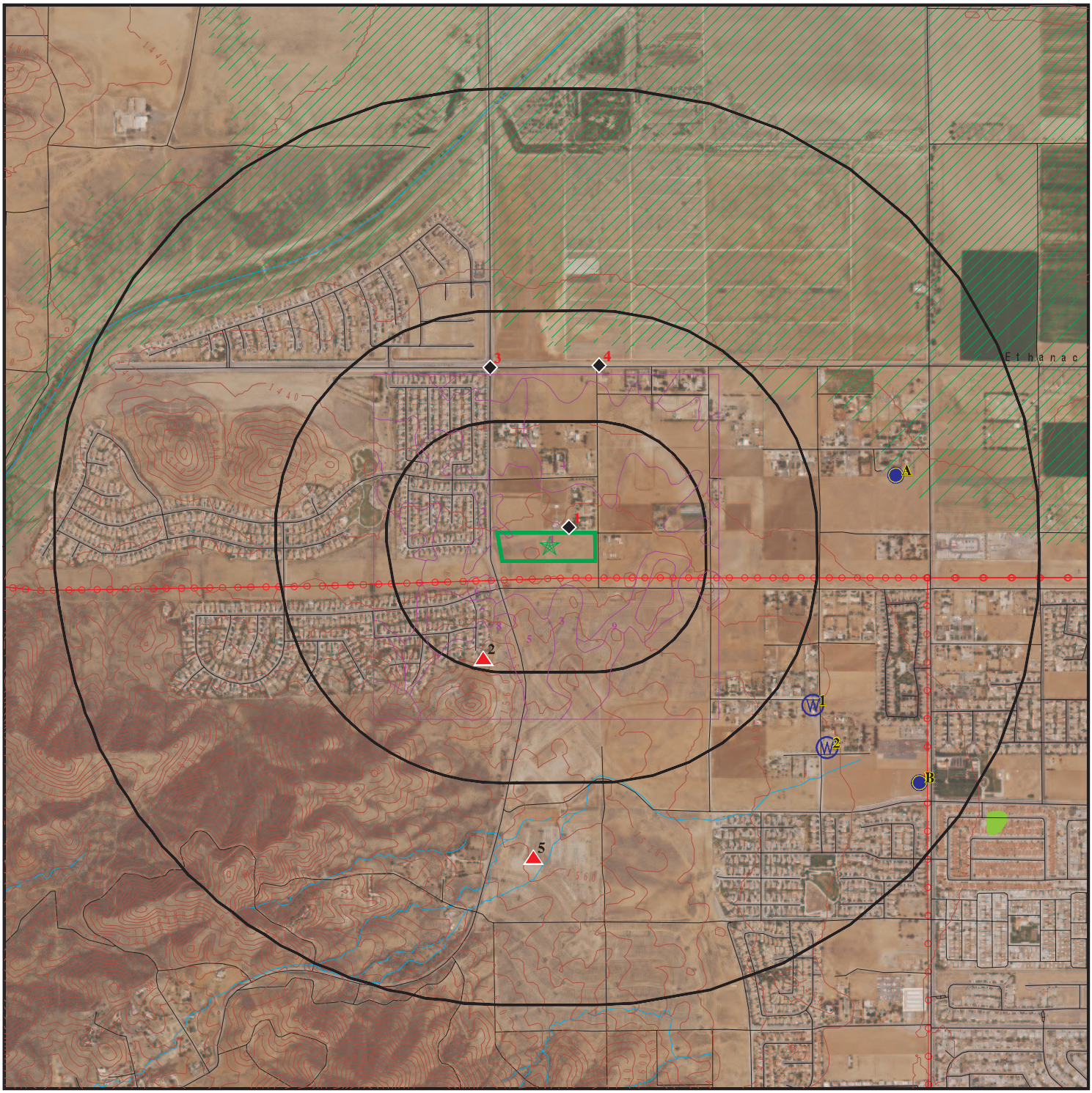
Lower Elevation	Address	Direction / Distance	Map ID	Page
NATIVE PLANT	***202 ETHANAC***	***NNE 1/4 - 1/2 (0.377 mi.)***	***4***	***18***

Reg Id: 083301975T

EXECUTIVE SUMMARY

There were no unmapped sites in this report.

OVERVIEW MAP - 6595465.2S



- 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

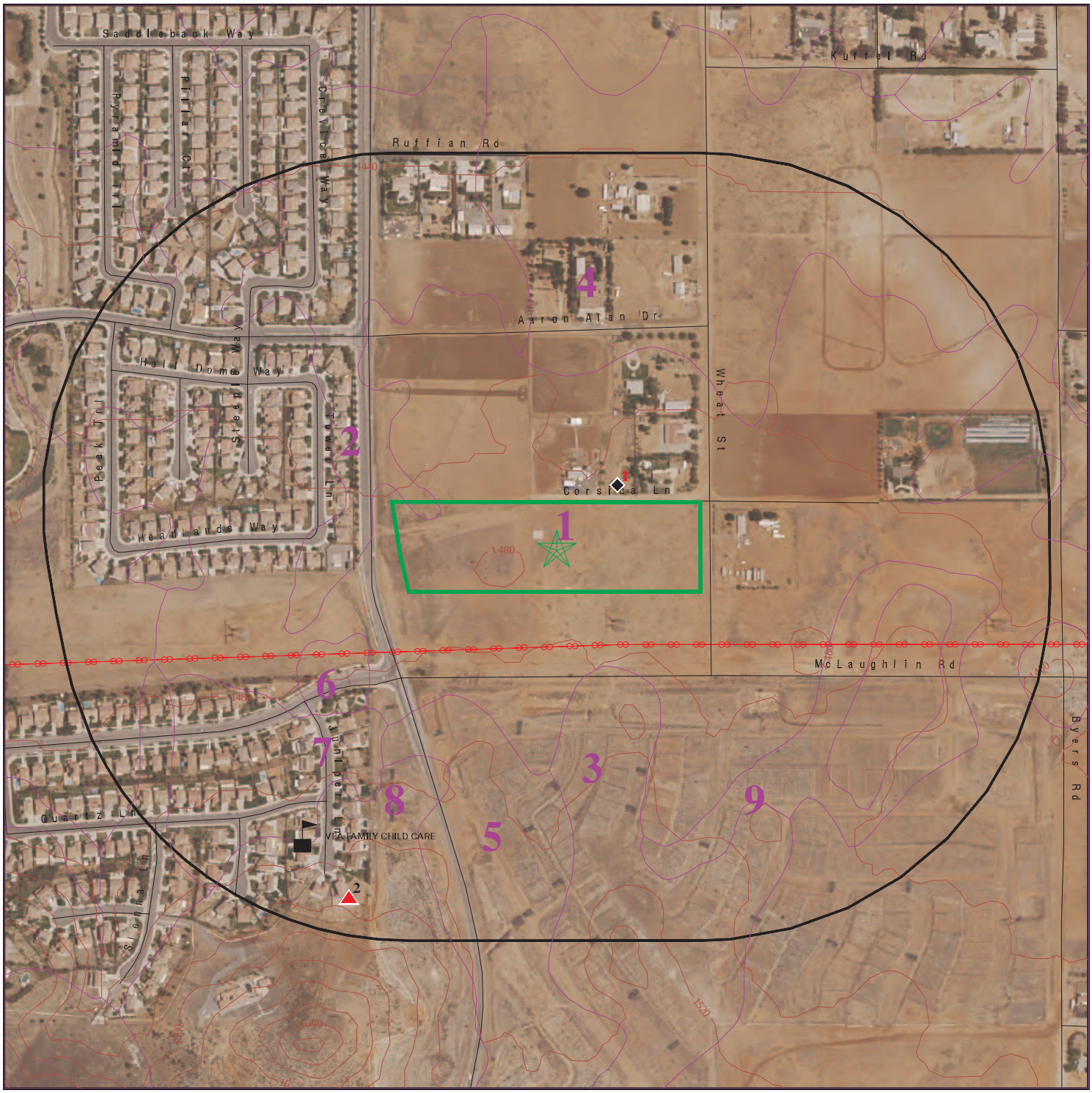
- Indian Reservations BIA
- Power transmission lines
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- National Wetland Inventory
- State Wetlands
- Areas of Concern

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:	Menifee Assemblage	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	APNs 330-180-046 & 330-180-010 MENIFEE CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.737135 / 117.221173	INQUIRY #:	6595465.2s
		DATE:	July 28, 2021 10:55 am

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DETAIL MAP - 6595465.2S



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

0 1/16 1/8 1/4 Miles

Indian Reservations BIA

Power transmission lines

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

Areas of Concern

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:	Menifee Assemblage	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	APNs 330-180-046 & 330-180-010 MENIFEE CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.737135 / 117.221173	INQUIRY #:	6595465.2s
		DATE:	July 28, 2021 10:57 am

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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	1.000		0	0	0	0	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-VSQG	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 CONTROLS	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	1	1	NR	2
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	1	NR	NR	1

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
CPS-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								
VCP	0.500		0	0	0	NR	NR	0
INDIAN 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	0	NR	NR	0
HAULERS	TP		NR	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	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
CERS HAZ WASTE	0.250		0	0	NR	NR	NR	0
US CDL	TP		NR	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	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
CERS TANKS	0.250		0	0	NR	NR	NR	0
Local Land Records								
LIENS	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
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
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		1	1	NR	NR	NR	2
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	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
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

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
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
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
UIC GEO	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
MILITARY PRIV SITES	TP		NR	NR	NR	NR	NR	0
PROJECT	TP		NR	NR	NR	NR	NR	0
WDR	TP		NR	NR	NR	NR	NR	0
CIWQS	TP		NR	NR	NR	NR	NR	0
CERS	TP		NR	NR	NR	NR	NR	0
NON-CASE INFO	TP		NR	NR	NR	NR	NR	0
OTHER OIL GAS	TP		NR	NR	NR	NR	NR	0
PROD WATER PONDS	TP		NR	NR	NR	NR	NR	0
SAMPLING POINT	TP		NR	NR	NR	NR	NR	0
WELL STIM PROJ	TP		NR	NR	NR	NR	NR	0
MINES MRDS	TP		NR	NR	NR	NR	NR	0
HWTS	TP		NR	NR	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	1	1	3	1	0	6

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

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

1
NE
< 1/8
0.012 mi.
64 ft.

NORMAN CARMICHAEL
25151 CORSICA LANE
MENIFEE, CA 92585

RCRA NonGen / NLR

1026479469
CAC003085393

Relative:
Lower

Actual:
1462 ft.

RCRA NonGen / NLR:

Date Form Received by Agency:		2020-09-24 00:00:00.0
Handler Name:	NORMAN CARMICHAEL	
Handler Address:		25151 CORSICA LANE
Handler City,State,Zip:		MENIFEE, CA 92585
EPA ID:		CAC003085393
Contact Name:		NORMAN CARMICHAEL
Contact Address:		17760 VIA GRACIA
Contact City,State,Zip:		SAN DIEGO, CA 92128
Contact Telephone:		858-232-8698
Contact Fax:		Not reported
Contact Email:		NCARMIC@OUTLOOK.COM
Contact Title:		Not reported
EPA Region:		09
Land Type:		Not reported
Federal Waste Generator Description:		Not a generator, verified
Non-Notifier:		Not reported
Biennial Report Cycle:		Not reported
Accessibility:		Not reported
Active Site Indicator:		Not reported
State District Owner:		Not reported
State District:		Not reported
Mailing Address:		17760 VIA GRACIA
Mailing City,State,Zip:		SAN DIEGO, CA 92128
Owner Name:		NORMAN CARMICHAEL
Owner Type:		Other
Operator Name:		NORMAN CARMICHAEL
Operator Type:		Other
Short-Term Generator Activity:		No
Importer Activity:		No
Mixed Waste Generator:		No
Transporter Activity:		No
Transfer Facility Activity:		No
Recycler Activity with Storage:		No
Small Quantity On-Site Burner Exemption:		No
Smelting Melting and Refining Furnace Exemption:		No
Underground Injection Control:		No
Off-Site Waste Receipt:		No
Universal Waste Indicator:		No
Universal Waste Destination Facility:		No
Federal Universal Waste:		No
Active Site Fed-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site Converter Treatment storage and Disposal Facility:		Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:		Not reported
Active Site State-Reg Handler:		---
Federal Facility Indicator:		Not reported
Hazardous Secondary Material Indicator:		N
Sub-Part K Indicator:		Not reported
Commercial TSD Indicator:		No
Treatment Storage and Disposal Type:		Not reported
2018 GPRA Permit Baseline:		Not on the Baseline
2018 GPRA Renewals Baseline:		Not on the Baseline
Permit Renewals Workload Universe:		Not reported

NORMAN CARMICHAEL (Continued) **1026479469**

Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2020-09-27 18:05:24.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	NORMAN CARMICHAEL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	17760 VIA GRACIA
Owner/Operator City,State,Zip:	SAN DIEGO, CA 92128
Owner/Operator Telephone:	858-232-8698
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	NORMAN CARMICHAEL
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	17760 VIA GRACIA
Owner/Operator City,State,Zip:	SAN DIEGO, CA 92128
Owner/Operator Telephone:	858-232-8698
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

NORMAN CARMICHAEL (Continued) **1026479469**

Historic Generators:
- Receive Date: 2020-09-24 00:00:00.0
- Handler Name: NORMAN CARMICHAEL
- Federal Waste Generator Description: Not a generator, verified
- State District Owner: Not reported
- Large Quantity Handler of Universal Waste: No
- Recognized Trader Importer: No
- Recognized Trader Exporter: No
- Spent Lead Acid Battery Importer: No
- Spent Lead Acid Battery Exporter: No
- Current Record: Yes
- Non Storage Recycler Activity: Not reported
- Electronic Manifest Broker: Not reported

List of NAICS Codes and Descriptions:
- NAICS Code: 56299
- NAICS Description: ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:
- Violations: No Violations Found

Evaluation Action Summary:
- Evaluations: No Evaluations Found

---

2 **JAMES LABAN** **RCRA NonGen / NLR** **1026483702**
SSW **3821 JUNIPER LANE** **CAC003089783**
1/8-1/4 **PERRIS, CA 92570**
0.223 mi.
1177 ft.

Relative:
Higher

Actual:
1534 ft.

RCRA NonGen / NLR:
- Date Form Received by Agency: 2020-10-23 00:00:00.0
- Handler Name: JAMES LABAN
- Handler Address: 3821 JUNIPER LANE
- Handler City,State,Zip: PERRIS, CA 92570
- EPA ID: CAC003089783
- Contact Name: JAMES LABAN
- Contact Address: 3821 JUNIPER LANE
- Contact City,State,Zip: PERRIS, CA 92570
- Contact Telephone: 951-821-0145
- Contact Fax: Not reported
- Contact Email: LEITU3@GMAIL.COM
- Contact Title: Not reported
- EPA Region: 09
- Land Type: Not reported
- Federal Waste Generator Description: Not a generator, verified
- Non-Notifier: Not reported
- Biennial Report Cycle: Not reported
- Accessibility: Not reported
- Active Site Indicator: Not reported
- State District Owner: Not reported
- State District: Not reported
- Mailing Address: 3821 JUNIPER LANE
- Mailing City,State,Zip: PERRIS, CA 92570
- Owner Name: JAMES LABAN

JAMES LABAN (Continued) **1026483702**

Owner Type:	Other
Operator Name:	JAMES LABAN
Operator Type:	Other
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No
Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	2020-10-26 14:55:52.0
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No

JAMES LABAN (Continued) **1026483702**

Sub-Part P Indicator: No

Handler - Owner Operator:

Owner/Operator Indicator:	Owner
Owner/Operator Name:	JAMES LABAN
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3821 JUNIPER LANE
Owner/Operator City,State,Zip:	PERRIS, CA 92570
Owner/Operator Telephone:	951-821-0145
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Owner/Operator Indicator:	Operator
Owner/Operator Name:	JAMES LABAN
Legal Status:	Other
Date Became Current:	Not reported
Date Ended Current:	Not reported
Owner/Operator Address:	3821 JUNIPER LANE
Owner/Operator City,State,Zip:	PERRIS, CA 92570
Owner/Operator Telephone:	951-821-0145
Owner/Operator Telephone Ext:	Not reported
Owner/Operator Fax:	Not reported
Owner/Operator Email:	Not reported

Historic Generators:

Receive Date:	2020-10-23 00:00:00.0
Handler Name: JAMES LABAN	
Federal Waste Generator Description:	Not a generator, verified
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:

NAICS Code:	56299
NAICS Description:	ALL OTHER WASTE MANAGEMENT SERVICES

Facility Has Received Notices of Violations:

Violations: No Violations Found

Evaluation Action Summary:

Evaluations: No Evaluations Found

3
NNW
1/4-1/2
0.372 mi.
1964 ft.

MONUMENT RANCH SITE
GOETZ ROAD / ETHANAC ROAD
PERRIS, CA 92570

ENVIROSTOR
SCH
CERS

S109548225
N/A

Relative:
Lower

Actual:
1431 ft.

ENVIROSTOR:

Name:	MONUMENT RANCH SITE
Address:	GOETZ ROAD / ETHANAC ROAD
City,State,Zip:	PERRIS, CA 92570
Facility ID:	70000024
Status:	No Further Action
Status Date:	06/22/2006
Site Code:	404643
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	23
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Assembly:	61
Senate:	31
Special Program:	Not reported
Restricted Use:	NO
Site Mgmt Req:	NONE SPECIFIED
Funding:	School District
Latitude:	33.74253
Longitude:	-117.2405
APN:	330-160-007, 330-160-008, 330-160-009, 330-160-010, 330-160-011, 330-160-012, 330-160-013, 330-160-014, 330-160-015, 330160007, 330160008
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic DDD DDE DDT
Confirmed COC:	30001-NO 30006-NO 30007-NO 30008-NO
Potential Description:	SOIL
Alias Name:	Romoland School District
Alias Type:	Alternate Name
Alias Name:	330-160-007
Alias Type:	APN
Alias Name:	330-160-008
Alias Type:	APN
Alias Name:	330-160-009
Alias Type:	APN
Alias Name:	330-160-010
Alias Type:	APN
Alias Name:	330-160-011
Alias Type:	APN
Alias Name:	330-160-012
Alias Type:	APN
Alias Name:	330-160-013
Alias Type:	APN
Alias Name:	330-160-014
Alias Type:	APN
Alias Name:	330-160-015
Alias Type:	APN
Alias Name:	330160007

MONUMENT RANCH SITE (Continued) **S109548225**

Alias Type: APN
Alias Name: 330160008
Alias Type: APN
Alias Name: 404643
Alias Type: Project Code (Site Code)
Alias Name: 20050024
Alias Type: Envirostor ID Number
Alias Name: 70000024
Alias Type: Envirostor ID Number

Completed Info:

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 06/26/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 08/09/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 01/03/2006
Comments: PEA workplan approval

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/20/2006
Comments: DTSC issued a No Further Action determination based on a Preliminary Environmental Assessment Report

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:

Name: MONUMENT RANCH SITE
Address: GOETZ ROAD / ETHANAC ROAD
City,State,Zip: PERRIS, CA 92570
Facility ID: 70000024
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 23
National Priorities List: NO

MONUMENT RANCH SITE (Continued) **S109548225**

Cleanup Oversight Agencies:	SMBRP
Lead Agency:	SMBRP
Lead Agency Description:	DTSC - Site Cleanup Program
Project Manager:	Not reported
Supervisor:	Shahir Haddad
Division Branch:	Southern California Schools & Brownfields Outreach
Site Code:	404643
Assembly:	61
Senate:	31
Special Program Status:	Not reported
Status:	No Further Action
Status Date:	06/22/2006
Restricted Use:	NO
Funding:	School District
Latitude:	33.74253
Longitude:	-117.2405
APN:	330-160-007, 330-160-008, 330-160-009, 330-160-010, 330-160-011, 330-160-012, 330-160-013, 330-160-014, 330-160-015, 330160007, 330160008
Past Use:	AGRICULTURAL - ORCHARD, AGRICULTURAL - ROW CROPS
Potential COC:	Arsenic, DDD, DDE, DDT
Confirmed COC:	30001-NO, 30006-NO, 30007-NO, 30008-NO
Potential Description:	SOIL
Alias Name:	Romoland School District
Alias Type:	Alternate Name
Alias Name:	330-160-007
Alias Type:	APN
Alias Name:	330-160-008
Alias Type:	APN
Alias Name:	330-160-009
Alias Type:	APN
Alias Name:	330-160-010
Alias Type:	APN
Alias Name:	330-160-011
Alias Type:	APN
Alias Name:	330-160-012
Alias Type:	APN
Alias Name:	330-160-013
Alias Type:	APN
Alias Name:	330-160-014
Alias Type:	APN
Alias Name:	330-160-015
Alias Type:	APN
Alias Name:	330160007
Alias Type:	APN
Alias Name:	330160008
Alias Type:	APN
Alias Name:	404643
Alias Type:	Project Code (Site Code)
Alias Name:	20050024
Alias Type:	Envirostor ID Number
Alias Name:	70000024
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo

MONUMENT RANCH SITE (Continued) **S109548225**

Completed Date: 06/26/2006
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Environmental Oversight Agreement
Completed Date: 08/09/2005
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Workplan
Completed Date: 01/03/2006
Comments: PEA workplan approval

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Preliminary Endangerment Assessment Report
Completed Date: 06/20/2006
Comments: DTSC issued a No Further Action determination based on a Preliminary Environmental Assessment Report

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

CERS:
Name: MONUMENT RANCH SITE
Address: GOETZ ROAD / ETHANAC ROAD
City,State,Zip: PERRIS, CA 92570
Site ID: 340232
CERS ID: 70000024
CERS Description: School Investigation

Affiliation:
Affiliation Type Desc: Lead Project Manager
Entity Name: IVY OSORNIO
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Supervisor
Entity Name: SHAHIR HADDAD
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported

MONUMENT RANCH SITE (Continued) **S109548225**

Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

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4 **NATIVE PLANT** **LUST** **S101307986**
NNE **202 ETHANAC** **HIST CORTESE** **N/A**
1/4-1/2 **PERRIS, CA 92570**
0.377 mi.
1989 ft.

Relative: **Lower**

Actual: **1431 ft.**

LUST REG 8:

Name:	NATIVE PLANT
Address:	202 ETHANAC
City:	PERRIS
Region:	8
County:	Riverside
Regional Board:	Santa Ana Region
Facility Status:	Case Closed
Case Number:	083301975T
Local Case Num:	91562
Case Type:	Soil only
Substance:	Gasoline
Qty Leaked:	Not reported
Abate Method:	Excavate and Treat - remove contaminated soil and treat (includes spreading or land farming)
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:	T0606500254
How Stopped Date:	5/29/1990
Enter Date:	12/19/1991
Date Confirmation of Leak Began:	Not reported
Date Preliminary Assessment Began:	Not reported
Discover Date:	5/29/1990
Enforcement Date:	Not reported
Close Date:	11/8/1993
Date Prelim Assessment Workplan Submitted:	6/21/1991
Date Pollution Characterization Began:	Not reported
Date Remediation Plan Submitted:	4/2/1992
Date Remedial Action Underway:	Not reported
Date Post Remedial Action Monitoring:	9/30/1993
Enter Date:	12/19/1991
GW Qualifies:	Not reported
Soil Qualifies:	Not reported
Operator:	Not reported
Facility Contact:	Not reported
Interim:	Not reported
Oversite Program:	LUST
Latitude:	33.793243
Longitude:	-117.2829513
MTBE Date:	Not reported
Max MTBE GW:	Not reported
MTBE Concentration:	0

NATIVE PLANT (Continued) **S101307986**

Max MTBE Soil:	Not reported
MTBE Fuel:	1
MTBE Tested:	Site NOT Tested for MTBE.Includes Unknown and Not Analyzed.
MTBE Class:	*
Staff:	CAB
Staff Initials:	UNK
Lead Agency:	Local Agency
Local Agency:	33000L
Hydr Basin #:	UNNAMED BASIN
Beneficial:	Not reported
Priority:	Not reported
Cleanup Fund Id:	Not reported
Work Suspended:	Not reported

Summary: Not reported

HIST CORTESE:

edr_fname:	NATIVE PLANT
edr_fadd1:	202 ETHANAC
City,State,Zip:	PERRIS, CA
Region:	CORTESE
Facility County Code:	33
Reg By:	LTNKA
Reg Id:	083301975T

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5 **ELEMENTARY SCHOOL NO. 14** **ENVIROSTOR** **S108974351**
South **FENCE POST DRIVE/RAM DRIVE** **SCH** **N/A**
1/2-1 **SUN CITY, CA 92585**
0.666 mi.
3519 ft.

Relative:
Higher

Actual:
1557 ft.

ENVIROSTOR:

Name:	ELEMENTARY SCHOOL NO. 14
Address:	FENCE POST DRIVE/RAM DRIVE
City,State,Zip:	SUN CITY, CA 92585
Facility ID:	60000776
Status:	Inactive - Withdrawn
Status Date:	10/22/2008
Site Code:	404764
Site Type:	School Investigation
Site Type Detailed:	School
Acres:	12.5
NPL:	NO
Regulatory Agencies:	SMBRP
Lead Agency:	SMBRP
Program Manager:	Angela Garcia
Supervisor:	Shahir Haddad
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:	33.727
Longitude:	-117.2218
APN:	NONE SPECIFIED
Past Use:	NONE

ELEMENTARY SCHOOL NO. 14 (Continued) **S108974351**

Potential COC: DDD DDE DDT
Confirmed COC: 30006-NO 30007-NO 30008-NO
Potential Description: SOIL
Alias Name: 404764
Alias Type: Project Code (Site Code)
Alias Name: 60000776
Alias Type: Envirostor ID Number

Completed Info:
Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Cost Recovery Closeout Memo
Completed Date: 10/22/2008
Comments: Not reported

Completed Area Name: PROJECT WIDE
Completed Sub Area Name: Not reported
Completed Document Type: Phase 1
Completed Date: 03/10/2008
Comments: DTSC determined that a Preliminary Environmental Assessment is required based on the Phase I report

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:

Name: ELEMENTARY SCHOOL NO. 14
Address: FENCE POST DRIVE/RAM DRIVE
City,State,Zip: SUN CITY, CA 92585
Facility ID: 60000776
Site Type: School Investigation
Site Type Detail: School
Site Mgmt. Req.: NONE SPECIFIED
Acres: 12.5
National Priorities List: NO
Cleanup Oversight Agencies: SMBRP
Lead Agency: SMBRP
Lead Agency Description: DTSC - Site Cleanup Program
Project Manager: Angela Garcia
Supervisor: Shahir Haddad
Division Branch: Southern California Schools & Brownfields Outreach
Site Code: 404764
Assembly: 67
Senate: 23
Special Program Status: Not reported
Status: Inactive - Withdrawn
Status Date: 10/22/2008
Restricted Use: NO
Funding: School District

ELEMENTARY SCHOOL NO. 14 (Continued) **S108974351**

Latitude:	33.727
Longitude:	-117.2218
APN:	NONE SPECIFIED
Past Use:	NONE
Potential COC:	DDD, DDE, DDT
Confirmed COC:	30006-NO, 30007-NO, 30008-NO
Potential Description:	SOIL
Alias Name:	404764
Alias Type:	Project Code (Site Code)
Alias Name:	60000776
Alias Type:	Envirostor ID Number

Completed Info:

Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Cost Recovery Closeout Memo
Completed Date:	10/22/2008
Comments:	Not reported
Completed Area Name:	PROJECT WIDE
Completed Sub Area Name:	Not reported
Completed Document Type:	Phase 1
Completed Date:	03/10/2008
Comments:	DTSC determined that a Preliminary Environmental Assessment is required based on the Phase I report
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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/11/2021
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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/11/2021
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

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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: N/A
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/11/2021
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: 02/22/2021
Date Data Arrived at EDR: 03/30/2021
Date Made Active in Reports: 06/17/2021
Number of Days to Update: 79

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 06/23/2021
Next Scheduled EDR Contact: 10/11/2021
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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/25/2021
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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/25/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly 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). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 39

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
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: 02/22/2021
Date Data Arrived at EDR: 02/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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: 02/22/2021
Date Data Arrived at EDR: 02/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 85

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/24/2021
Date Made Active in Reports: 06/17/2021
Number of Days to Update: 85

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 05/10/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 77

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Quarterly

State and tribal leaking storage tank lists

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 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: No Update Planned

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 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: 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: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

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: No Update Planned

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

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 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 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

INDIAN LUST R10: Leaking Underground Storage Tanks on Indian Land

LUSTs on Indian land in Alaska, Idaho, Oregon and Washington.

Date of Government Version: 11/12/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/07/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

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: 10/09/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 09/30/2020
Date Data Arrived at EDR: 12/22/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/02/2020
Date Data Arrived at EDR: 12/18/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84

Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

CPS-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: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: 01/29/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33

Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases
UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 03/05/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 04/01/2021
Number of Days to Update: 23
Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

UST: Active UST Facilities
Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
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: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
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: 04/08/2020
Date Data Arrived at EDR: 05/20/2020
Date Made Active in Reports: 08/12/2020
Number of Days to Update: 84
Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/07/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86
Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/09/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86
Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

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: 10/02/2020
Date Data Arrived at EDR: 12/18/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 84

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 11/01/2021
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: 11/12/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 09/30/2020
Date Data Arrived at EDR: 12/22/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 80

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
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: 10/01/2020
Date Data Arrived at EDR: 12/16/2020
Date Made Active in Reports: 03/12/2021
Number of Days to Update: 86

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 06/11/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

State and tribal voluntary cleanup sites

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: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: No Update Planned

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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Quarterly

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: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: No Update Planned

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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
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: 03/15/2021
Date Data Arrived at EDR: 03/16/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 06/10/2021
Next Scheduled EDR Contact: 09/27/2021
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: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 11/23/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 08/23/2021
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: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: No Update Planned

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: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
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: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
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: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 83

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/22/2021
Next Scheduled EDR Contact: 09/06/2021
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: 04/23/2021
Date Data Arrived at EDR: 04/23/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 07/22/2021
Next Scheduled EDR Contact: 11/08/2021
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: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 10/18/2021
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

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

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: 12/07/2020
Date Data Arrived at EDR: 12/09/2020
Date Made Active in Reports: 03/02/2021
Number of Days to Update: 83

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 02/24/2021
Date Data Arrived at EDR: 02/24/2021
Date Made Active in Reports: 05/14/2021
Number of Days to Update: 79

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

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

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

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing

Aboveground storage tank sites

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/07/2021
Date Made Active in Reports: 07/23/2021
Number of Days to Update: 77

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

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

CERS TANKS: California Environmental Reporting System (CERS) Tanks

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

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: 03/01/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/11/2021
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: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 77

Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/24/2021
Date Made Active in Reports: 06/17/2021
Number of Days to Update: 85
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
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: 04/04/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78
Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
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: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
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: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 57

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 02/11/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 47

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 08/30/2021
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: 07/13/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

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: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
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: 05/18/2021
Next Scheduled EDR Contact: 08/23/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 06/17/2021
Number of Days to Update: 86

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: No Update Planned

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: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 05/07/2021
Next Scheduled EDR Contact: 08/16/2021
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: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 09/27/2021
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: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82

Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 05/17/2021
Next Scheduled EDR Contact: 08/30/2021
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: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/16/2021
Number of Days to Update: 87

Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 07/19/2021
Next Scheduled EDR Contact: 11/01/2021
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: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 09/13/2021
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: 01/22/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 82

Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 07/14/2021
Next Scheduled EDR Contact: 11/01/2021
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: 12/30/2020
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 03/05/2021
Number of Days to Update: 50

Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 08/16/2021
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: 11/19/2020
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73

Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
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: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: No Update Planned

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: No Update Planned

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: No Update Planned

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: 03/08/2021
Date Data Arrived at EDR: 03/11/2021
Date Made Active in Reports: 05/11/2021
Number of Days to Update: 61

Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 07/14/2021
Next Scheduled EDR Contact: 11/01/2021
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: 12/31/2019
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70

Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/13/2021
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: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251

Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/13/2021
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: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 05/07/2021
Next Scheduled EDR Contact: 08/16/2021
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: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 06/22/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: No Update Planned

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: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80
Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 07/23/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Quarterly

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: 06/30/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 07/16/2021
Number of Days to Update: 2

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 07/02/2021
Next Scheduled EDR Contact: 10/18/2021
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: 12/31/2017
Date Data Arrived at EDR: 06/22/2020
Date Made Active in Reports: 11/20/2020
Number of Days to Update: 151

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 06/21/2021
Next Scheduled EDR Contact: 10/04/2021
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: 07/02/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Varies

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: 08/08/2017
Date Data Arrived at EDR: 09/11/2018
Date Made Active in Reports: 09/14/2018
Number of Days to Update: 3

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 07/23/2021
Next Scheduled EDR Contact: 11/15/2021
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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites

A listing of former lead smelter site locations.

Date of Government Version: 04/27/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 16

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/11/2021
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: No Update Planned

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: No Update Planned

MINES VIOLATIONS: MSHA Violation Assessment Data

Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 05/27/2021
Date Data Arrived at EDR: 05/27/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 14

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

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: 02/01/2021
Date Data Arrived at EDR: 02/24/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 84

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/06/2021
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: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/06/2021
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: 05/27/2021
Next Scheduled EDR Contact: 09/06/2021
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: 03/23/2021
Date Data Arrived at EDR: 03/25/2021
Date Made Active in Reports: 06/17/2021
Number of Days to Update: 84

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 06/14/2021
Next Scheduled EDR Contact: 09/20/2021
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: 02/03/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 33

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

DOCKET HWC: Hazardous Waste Compliance Docket Listing

A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/17/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 84

Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 05/21/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information

ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 04/04/2021
Date Data Arrived at EDR: 04/06/2021
Date Made Active in Reports: 06/25/2021
Number of Days to Update: 80

Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 07/07/2021
Next Scheduled EDR Contact: 10/25/2021
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: 02/17/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33

Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
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: 03/22/2021
Date Data Arrived at EDR: 03/23/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 79

Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing

list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64

Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 02/23/2021
Date Data Arrived at EDR: 02/25/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 83

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing

A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 02/26/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

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: 03/01/2021
Date Data Arrived at EDR: 03/04/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 77

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
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: 12/31/2018
Date Data Arrived at EDR: 06/16/2020
Date Made Active in Reports: 08/28/2020
Number of Days to Update: 73

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 06/10/2021
Next Scheduled EDR Contact: 09/27/2021
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: 04/16/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing

Financial Assurance information

Date of Government Version: 04/14/2021
Date Data Arrived at EDR: 04/15/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
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: 05/13/2021
Date Data Arrived at EDR: 05/13/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 74

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
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: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Annually

ICE: ICE
Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 05/14/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 74
Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
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: 05/14/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 74
Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
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: 04/05/2021
Date Data Arrived at EDR: 04/06/2021
Date Made Active in Reports: 06/23/2021
Number of Days to Update: 78
Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/18/2021
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: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
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: 01/29/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
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: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 78
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
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: 03/12/2021
Date Data Arrived at EDR: 03/16/2021
Date Made Active in Reports: 06/01/2021
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
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: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
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 boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 11/19/2019
Date Data Arrived at EDR: 01/07/2020
Date Made Active in Reports: 03/09/2020
Number of Days to Update: 62

Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/18/2021
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: 05/14/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: No Update Planned

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: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing
In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 03/09/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22

Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 06/07/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System
The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 11/30/2020
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/12/2021
Number of Days to Update: 73
Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 05/19/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)

Produced water ponds sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)

Sampling point - public sites

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)

Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 03/08/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/30/2021
Number of Days to Update: 21

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 05/27/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Varies

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 04/08/2021
Date Data Arrived at EDR: 04/09/2021
Date Made Active in Reports: 04/20/2021
Number of Days to Update: 11

Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Varies

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55

Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 06/30/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: No Update Planned

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120

Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 06/30/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: No Update Planned

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 06/30/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: No Update Planned

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

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COUNTY RECORDS

ALAMEDA COUNTY:

CS ALAMEDA: 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: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks
Underground storage tank sites located in Alameda county.

Date of Government Version: 03/17/2021
Date Data Arrived at EDR: 03/18/2021
Date Made Active in Reports: 03/25/2021
Number of Days to Update: 7

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 02/04/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 78

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: 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: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 06/15/2021
Date Data Arrived at EDR: 06/16/2021
Date Made Active in Reports: 07/02/2021
Number of Days to Update: 16

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 04/21/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 81

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 12/17/2020
Date Data Arrived at EDR: 01/28/2021
Date Made Active in Reports: 04/16/2021
Number of Days to Update: 78

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/12/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 75

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: 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: 01/14/2021
Date Data Arrived at EDR: 01/15/2021
Date Made Active in Reports: 04/05/2021
Number of Days to Update: 80

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 06/23/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: 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: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/17/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 05/20/2021
Number of Days to Update: 2

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 05/10/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/14/2021
Date Data Arrived at EDR: 04/15/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 82

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 04/22/2021
Date Data Arrived at EDR: 04/30/2021
Date Made Active in Reports: 07/19/2021
Number of Days to Update: 80

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 01/19/2021
Date Data Arrived at EDR: 01/21/2021
Date Made Active in Reports: 01/28/2021
Number of Days to Update: 7

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: 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: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List

Cupa facility list

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/12/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 75

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List

Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County

San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

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: N/A
Telephone: N/A
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: No Update Planned

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 04/08/2021
Date Data Arrived at EDR: 04/13/2021
Date Made Active in Reports: 06/28/2021
Number of Days to Update: 76

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 06/29/2021
Next Scheduled EDR Contact: 10/18/2021
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 04/12/2021
Date Data Arrived at EDR: 04/13/2021
Date Made Active in Reports: 06/28/2021
Number of Days to Update: 76

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 81

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 02/04/2021
Date Data Arrived at EDR: 04/16/2021
Date Made Active in Reports: 04/21/2021
Number of Days to Update: 5

Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 07/12/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 06/28/2021
Number of Days to Update: 11

Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 06/17/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 03/02/2021
Date Data Arrived at EDR: 04/16/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 81
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Annually

UST EL SEGUNDO: 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: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65
Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76
Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: 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: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72
Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 06/22/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: No Update Planned

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 03/24/2021
Date Data Arrived at EDR: 04/07/2021
Date Made Active in Reports: 06/24/2021
Number of Days to Update: 78

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 05/13/2021
Date Data Arrived at EDR: 05/14/2021
Date Made Active in Reports: 07/26/2021
Number of Days to Update: 73

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 06/02/2021
Next Scheduled EDR Contact: 09/06/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 06/23/2021
Date Data Arrived at EDR: 06/23/2021
Date Made Active in Reports: 06/24/2021
Number of Days to Update: 1

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 06/22/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: 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: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 04/29/2021
Date Made Active in Reports: 07/15/2021
Number of Days to Update: 77

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 04/30/2021
Date Made Active in Reports: 07/19/2021
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 05/03/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 9

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/29/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 04/29/2021
Date Data Arrived at EDR: 04/30/2021
Date Made Active in Reports: 07/19/2021
Number of Days to Update: 80

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/16/2021
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 05/25/2021
Date Data Arrived at EDR: 05/26/2021
Date Made Active in Reports: 06/01/2021
Number of Days to Update: 6
Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64
Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 06/29/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 14
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 06/29/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 14
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 06/07/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 03/30/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/23/2021
Number of Days to Update: 83
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 07/01/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Quarterly

ML SACRAMENTO: 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: 03/30/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/25/2021
Number of Days to Update: 85
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 06/23/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 04/28/2021
Date Data Arrived at EDR: 04/29/2021
Date Made Active in Reports: 05/03/2021
Number of Days to Update: 4

Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 07/26/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: 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: 05/19/2021
Date Data Arrived at EDR: 05/19/2021
Date Made Active in Reports: 06/07/2021
Number of Days to Update: 19

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: 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: 03/02/2021
Date Data Arrived at EDR: 03/03/2021
Date Made Active in Reports: 05/21/2021
Number of Days to Update: 79

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 05/28/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities
San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing
A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

SAN DIEGO CO SAM: 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: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing
Cupa facilities

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/07/2021
Date Made Active in Reports: 07/23/2021
Number of Days to Update: 77
Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

LUST SAN FRANCISCO: 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: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/07/2021
Date Made Active in Reports: 07/23/2021
Number of Days to Update: 77
Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15
Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 06/08/2021
Next Scheduled EDR Contact: 09/27/2021
Data Release Frequency: No Update Planned

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 05/07/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 05/14/2021
Number of Days to Update: 3
Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 05/06/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/10/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61
Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 06/02/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: No Update Planned

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: 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: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 02/24/2021
Date Data Arrived at EDR: 02/26/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 82
Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

HIST LUST SANTA CLARA: 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

LUST SANTA CLARA: 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: 05/18/2021
Next Scheduled EDR Contact: 09/06/2021
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: 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: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: 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: 05/12/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: No Update Planned

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 03/23/2021
Date Data Arrived at EDR: 03/25/2021
Date Made Active in Reports: 06/10/2021
Number of Days to Update: 77

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 06/22/2021
Next Scheduled EDR Contact: 09/12/2021
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 06/28/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 04/01/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/23/2021
Number of Days to Update: 83

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 06/15/2021
Next Scheduled EDR Contact: 10/04/2021
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 02/09/2021
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 05/05/2021
Number of Days to Update: 83

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 07/06/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 05/25/2021
Next Scheduled EDR Contact: 09/13/2021
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 04/14/2021
Date Data Arrived at EDR: 04/15/2021
Date Made Active in Reports: 07/06/2021
Number of Days to Update: 82

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 07/27/2021
Next Scheduled EDR Contact: 11/15/2021
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: 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: 03/29/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 07/12/2021
Number of Days to Update: 81

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

LF VENTURA: 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: 06/22/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: No Update Planned

LUST VENTURA: 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: 05/05/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: No Update Planned

MED WASTE VENTURA: 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: 03/29/2021
Date Data Arrived at EDR: 04/21/2021
Date Made Active in Reports: 04/23/2021
Number of Days to Update: 2

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 07/15/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 03/01/2021
Date Data Arrived at EDR: 03/09/2021
Date Made Active in Reports: 03/31/2021
Number of Days to Update: 22
Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 06/04/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 03/26/2021
Date Data Arrived at EDR: 04/01/2021
Date Made Active in Reports: 06/23/2021
Number of Days to Update: 83
Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 06/22/2021
Next Scheduled EDR Contact: 10/11/2021
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 04/21/2021
Date Data Arrived at EDR: 04/22/2021
Date Made Active in Reports: 05/12/2021
Number of Days to Update: 20
Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 07/20/2021
Next Scheduled EDR Contact: 11/08/2021
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: 10/05/2020
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 82
Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 05/11/2021
Next Scheduled EDR Contact: 08/23/2021
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36
Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 07/09/2021
Next Scheduled EDR Contact: 10/18/2021
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: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 04/30/2021
Next Scheduled EDR Contact: 08/09/2021
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 07/07/2021
Next Scheduled EDR Contact: 10/25/2021
Data Release Frequency: Annually

RI MANIFEST: Manifest information

Hazardous waste manifest information

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 02/24/2021
Number of Days to Update: 13

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 05/13/2021
Next Scheduled EDR Contact: 08/30/2021
Data Release Frequency: Annually

WI MANIFEST: Manifest Information

Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 06/03/2021
Next Scheduled EDR Contact: 09/20/2021
Data Release Frequency: Annually

Oil/Gas Pipelines

Source: Endeavor Business Media

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 Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data

Source: Endeavor Business Media

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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 and Wildlife
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

MENIFEE ASSEMBLAGE
APNS 330-180-046 & 330-180-010
MENIFEE, CA 92585

TARGET PROPERTY COORDINATES

Latitude (North):	33.737135 - 33° 44' 13.69''
Longitude (West):	117.221173 - 117° 13' 16.22''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	479512.0
UTM Y (Meters):	3732839.0
Elevation:	1467 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 principle 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).

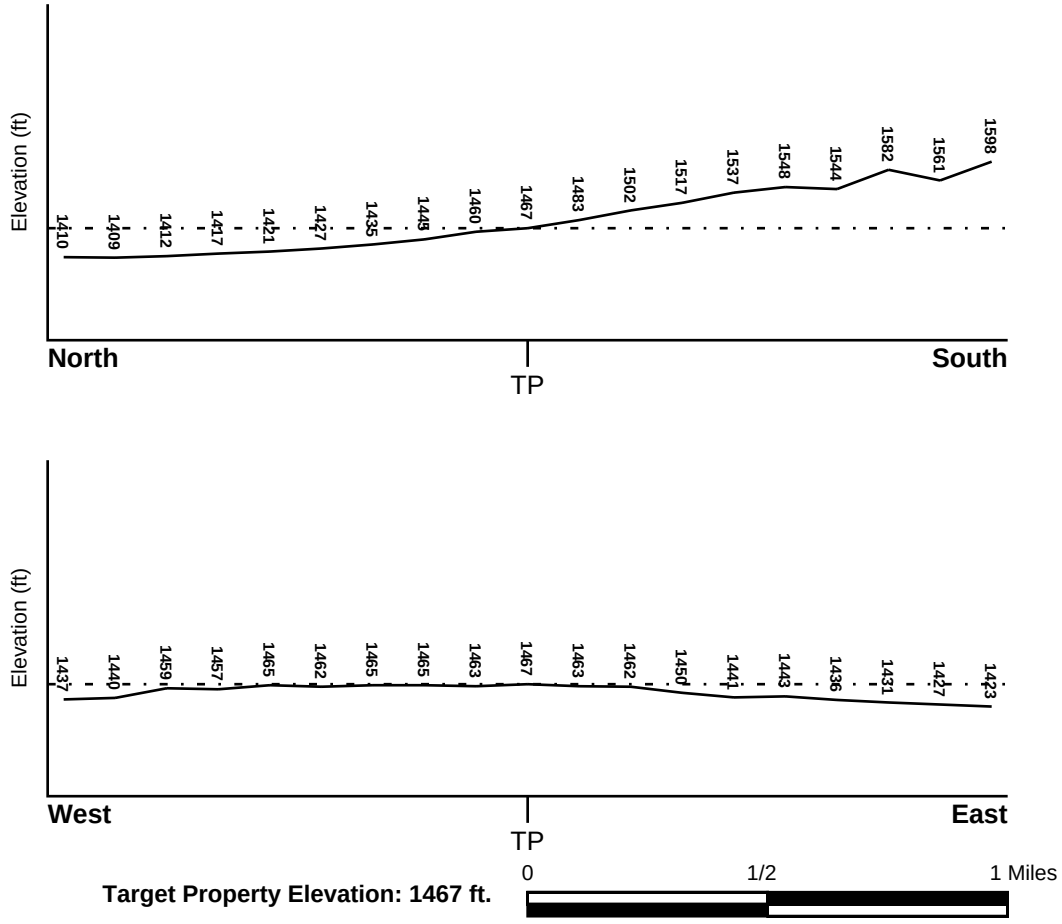
TOPOGRAPHIC INFORMATION

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 North

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



Target Property Elevation: 1467 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
06065C2055H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1440H	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

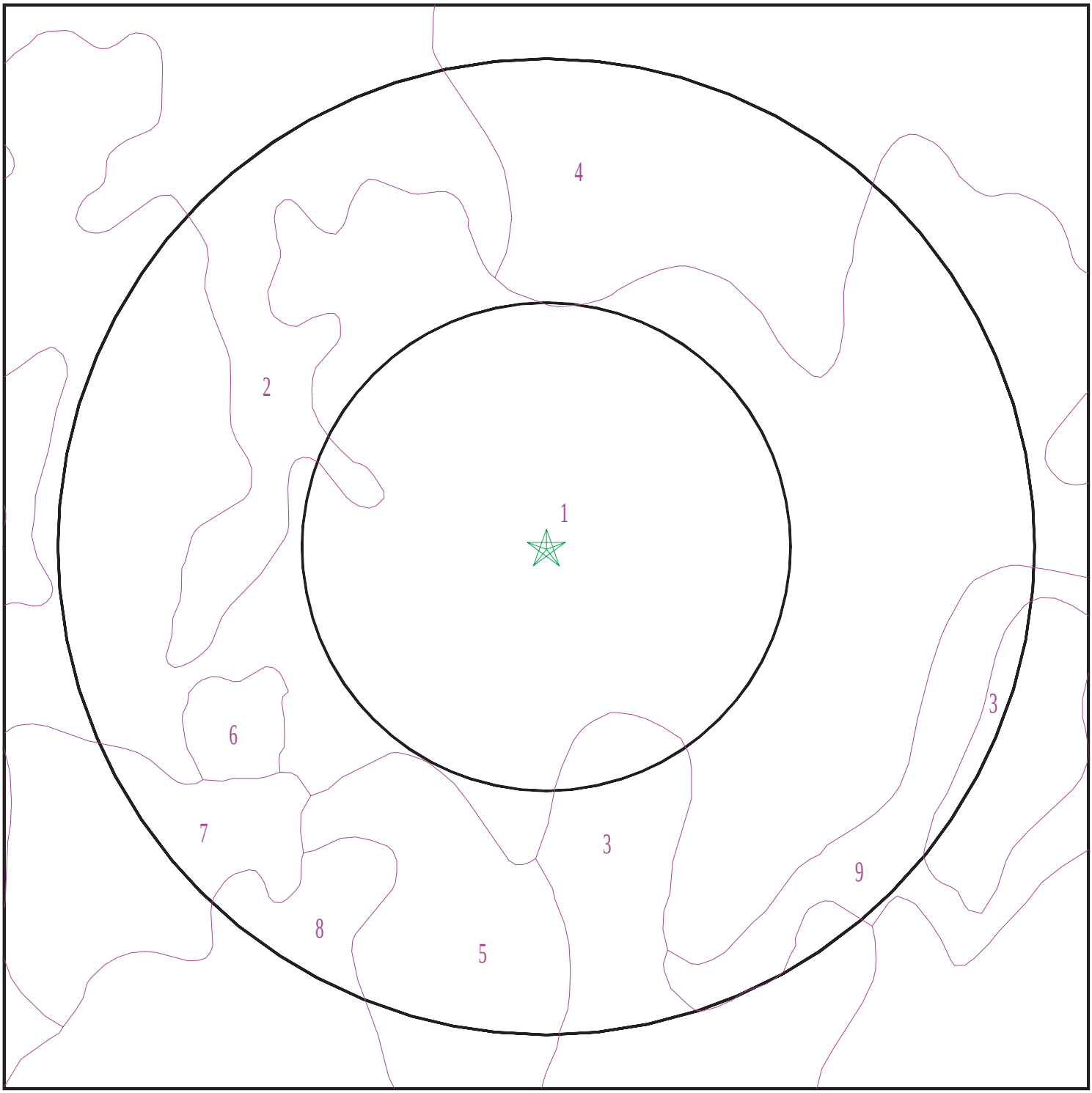
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

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 - 6595465.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	Menifee Assemblage	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	APNs 330-180-046 & 330-180-010 MENIFEE CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.737135 / 117.221173	INQUIRY #:	6595465.2s
		DATE:	July 28, 2021 10:58 am

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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: AULD

Soil Surface Texture: clay

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	27 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	27 inches	44 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	44 inches	48 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Clayey Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 2

Soil Component Name: BUCHENAU

Soil Surface Texture: silt 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: Moderately well drained

Hydric Status: Not hydric

Corrosion Potential - Uncoated Steel: Moderate

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	7 inches	silt loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
2	7 inches	44 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:
3	44 inches	61 inches	cemented	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.01 Min: 0	Max: Min:

Soil Map ID: 3

Soil Component Name: CAJALCO

Soil Surface Texture: fine 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	12 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	12 inches	18 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	61 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 4

Soil Component Name: LAS POSAS

Soil Surface Texture: 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	11 inches	31 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	31 inches	53 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 5

Soil Component Name: CAJALCO

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	12 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	12 inches	22 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	22 inches	61 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 6

Soil Component Name: ARLINGTON

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	11 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: 141 Min: 42	Max: 7.3 Min: 6.6
2	11 inches	24 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: 141 Min: 42	Max: 7.3 Min: 6.6
3	24 inches	35 inches	cemented	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: 141 Min: 42	Max: 7.3 Min: 6.6
4	35 inches	46 inches	coarse 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: 141 Min: 42	Max: 7.3 Min: 6.6

Soil Map ID: 7

Soil Component Name: WYMAN

Soil Surface Texture: 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: Moderate

Depth to Bedrock Min: > 0 inches

Depth to Watertable Min: > 0 inches

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	14 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%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
2	14 inches	35 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
3	35 inches	50 inches	stratified loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6
4	50 inches	59 inches	stratified loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), Lean Clay	Max: 4 Min: 1.4	Max: 8.4 Min: 6.6

Soil Map ID: 8

Soil Component Name: CAJALCO

Soil Surface Texture: fine 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	12 inches	fine sandy loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	12 inches	18 inches	loam	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	18 inches	61 inches	weathered bedrock	Granular materials (35 pct. or less passing No. 200), Silty, or Clayey Gravel and Sand.	Not reported	Max: 0.42 Min: 0	Max: Min:

Soil Map ID: 9

Soil Component Name: LAS POSAS

Soil Surface Texture: 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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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	11 inches	loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
2	11 inches	29 inches	clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:
3	29 inches	53 inches	weathered bedrock	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty Soils.	Not reported	Max: 0.42 Min: 0	Max: Min:

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	USGS40000137574	1/2 - 1 Mile ESE
2	USGS40000137534	1/2 - 1 Mile SE
A4	USGS40000137694	1/2 - 1 Mile ENE
B5	USGS40000137511	1/2 - 1 Mile ESE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL FRDS PUBLIC WATER SUPPLY SYSTEM INFORMATION

MAP ID	WELL ID	LOCATION FROM TP

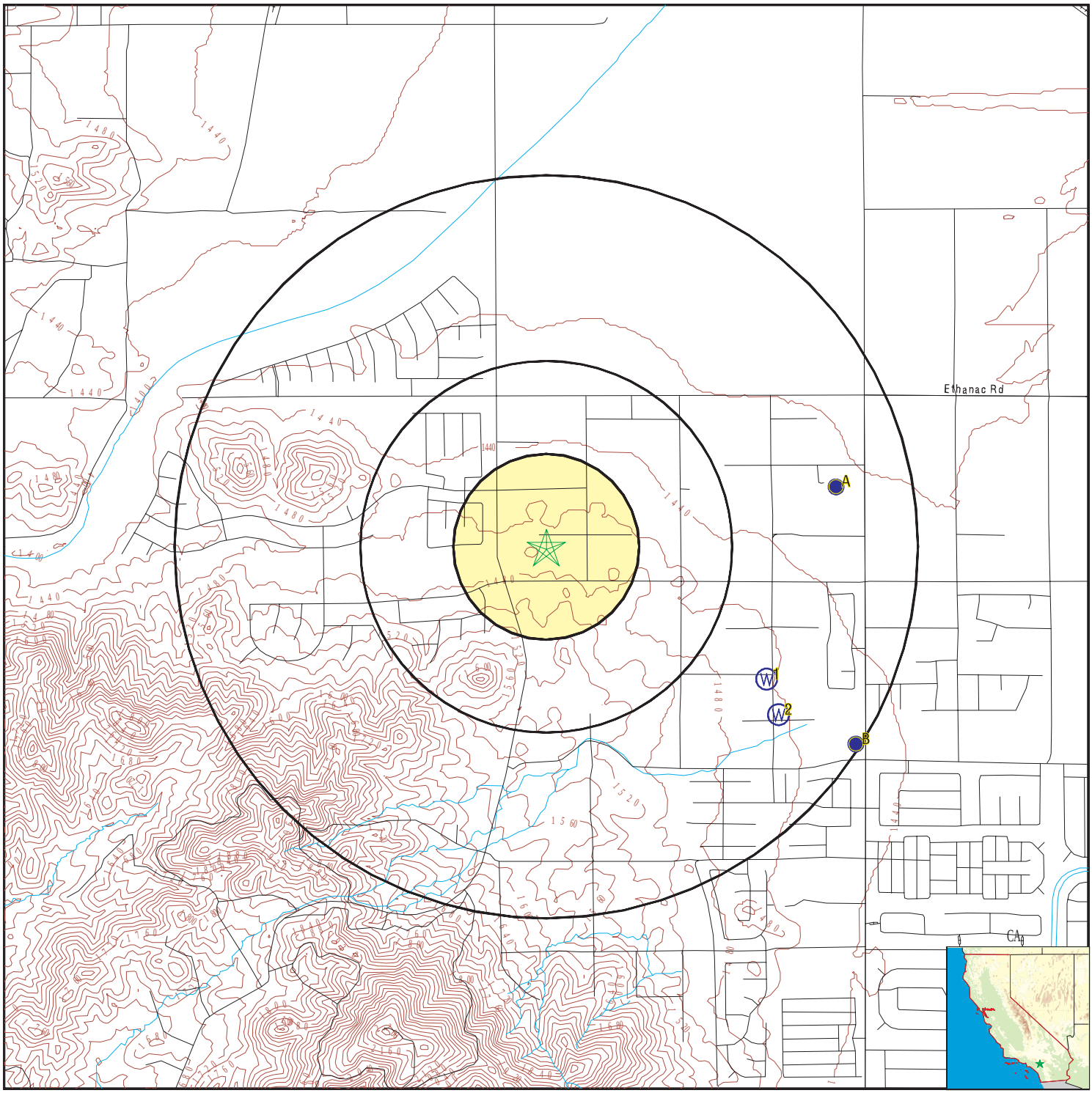
No PWS System Found

Note: PWS System location is not always the same as well location.

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A3	CADWR9000005258	1/2 - 1 Mile ENE
B6	CAUSGSN00006828	1/2 - 1 Mile ESE

PHYSICAL SETTING SOURCE MAP - 6595465.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- 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:	Menifee Assemblage	CLIENT:	Partner Engineering and Science, Inc.
ADDRESS:	APNs 330-180-046 & 330-180-010 MENIFEE CA 92585	CONTACT:	Roy Zamarripa
LAT/LONG:	33.737135 / 117.221173	INQUIRY #:	6595465.2s
		DATE:	July 28, 2021 10:58 am

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

1
ESE **FED USGS** **USGS40000137574**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17Q001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	Other aquifers	Formation Type:	Not Reported
Aquifer Type:	Not Reported	Construction Date:	198809
Well Depth:	210	Well Depth Units:	ft
Well Hole Depth:	210	Well Hole Depth Units:	ft

2
SE **FED USGS** **USGS40000137534**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17R002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19920211	Well Depth:	220
Well Depth Units:	ft	Well Hole Depth:	220
Well Hole Depth Units:	ft		

A3
ENE **CA WELLS** **CADWR9000005258**
1/2 - 1 Mile
Lower

State Well #:	05S03W17A001S	Station ID:	6316
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

A4
ENE **FED USGS** **USGS40000137694**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17A001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported

Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19950206	Well Depth:	160
Well Depth Units:	ft	Well Hole Depth:	160
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1995-02-07
Feet below surface:	22	Feet to sea level:	Not Reported
Note:	Not Reported		

B5
ESE **FED USGS** **USGS40000137511**
1/2 - 1 Mile
Lower

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17R001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	370
Well Depth Units:	ft	Well Hole Depth:	370
Well Hole Depth Units:	ft		

B6
ESE **CA WELLS** **CAUSGSN00006828**
1/2 - 1 Mile
Lower

Well ID:	USGS-334346117122101	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334346117122101	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334346117122101&store_num=		
GeoTracker Data:	Not Reported		

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 and Wildlife
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.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

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.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
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.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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: QUALIFICATIONS/INSURANCE

Education

M.S. and B.S. Petroleum Engineering**,** University of Wyoming, Laramie
A.A. Engineering**,** San Joaquin Delta College, Stockton, California

Registrations

Registered Environmental Property Assessor (REPA)
AHERA Building Inspector

Highlights

Over 25 years performing Phase I Environmental Site Assessments, Environmental Transaction Screens, Phase II Subsurface Investigations, Asbestos Surveys, Lead-based Paint Surveys, Radon Studies, Mold Assessments, Lead-in-water sampling and analysis, Property Condition Assessments (PCAs), Small Loan PCAs, Construction Progress Monitoring and Regulatory Compliance Assessments.

Experience Summary

Mr. Loomer has over 30 years of experience in the environmental and engineering industries. He has significant experience in due diligence assessments for a variety of property types and the needs and requirements of varied number of reporting standards, including ASTM standards, EPA's All Appropriate Inquiry (AAI), and customized client formats.

- Personally performed more than 5,000 ESAs and PCAs on properties in over 30 states throughout the country.
- Performed multiple Phase II subsurface investigations at environmentally suspect properties to verify the presence and degree of subsurface impact.
- Assisted lenders with Construction Loan Monitoring (CLM) on numerous properties to determine appropriate draw amounts during the construction/renovation processes.
- Monitored and interpreted Measurement While Drilling (MWD) mud pulse telemetry systems. Worked with drillers and directional staff to achieve predetermined targets for both on-shore and offshore gas and oil exploration in the Gulf of Mexico.
- Designed tilt-up buildings and lifting systems to withstand various forces and loads. Duties included management of technical staff and design analysis.

Finally, Mr. Loomer's diversity across residential, industrial, municipal, and commercial environments is a major contribution to Partner Engineering and Science's Associate team in the West region of the United States.

Sarah Vosovic
Project Manager

PARTNER Engineering and Science, Inc.

Education

B.S., Environmental Science, California State University, Chico

Registrations

OSHA 40-Hour HAZWOPER
AHERA Building Inspector training
California Department of Health Services/USEPA Lead Inspector/Assessor training

Summary of Professional Experience

Ms. Vosovic has more than 14 years of experience in the environmental consulting field and has worked in various disciplines, including environmental due diligence, NEPA compliance, lead-based paint and asbestos assessment, and LUST monitoring and reporting. Ms. Vosovic has performed hundreds of Phase I ESAs. She has also served as senior reviewer for NEPA compliance documents, with thousands of reports reviewed. She has tracked and managed the regulatory compliance for hundreds of microwave sites for a major telecommunications carrier.

Ms. Vosovic is well versed in EPA's All Appropriate Inquiry and ASTM E1527-13. She is knowledgeable in due diligence reporting standards, including Fannie Mae DUS, Freddie Mac, and HUD. Ms. Vosovic has conducted Phase I ESAs on a wide range of properties. Site assessment experience includes agricultural properties, semiconductor manufacturing facilities, fueling and automobile repair facilities, chemical distribution facilities, landfills, oil well fields, telecommunications sites, and shopping centers with dry cleaning facilities. She has scoped projects, mentored field personnel, identified environmental risks, and regularly provides detailed reports within demanding deadlines.

Ms. Vosovic is responsible for conducting all aspects of Phase I Environmental Site Assessments including proposal writing, staffing projects, client liaison, site reconnaissance and record reviews. Ms. Vosovic also provides management and QA/QC review of Phase I ESAs and Transaction Screens, and is focused on providing exemplary client service. Ms. Vosovic is responsible for ensuring consistency and quality of due diligence services and ensuring that client-specific requirements are met, as well as the requirements of ASTM and AAI standards. Ms. Vosovic displays excellent technical writing and editing skills, attention to detail, and excels at providing concise, logical conclusions and recommendations.

Project experience for Ms. Vosovic includes the following:

- Provided senior review for thousands of NEPA Screening Reports, Environmental Assessments, Section 106 Reports, SHPO consultation packets, NEPA Audit Reports, and

other related documents for various telecommunications industry clients. NEPA Technical Manager for multiple telecommunications industry clients in the western United States. Served as the primary point of contact with multiple state and federal agencies.

- Assisted in subsurface investigations at heavily industrialized and commercially developed properties. Subsurface investigations included the installation of soil borings, characterization of soils, and subsequent sampling of soil and groundwater. Oversaw geophysical surveys.

- Evaluated proposed microwave installations, LTE installations and underlying support structures for compliance with environmental, FAA, and FCC regulations. Tracked and managed over 700 microwave sites in two markets. Worked closely with the client, construction managers, turf vendors, engineers, and RF safety engineers to obtain and track regulatory compliance documentation.

- Managed a database and scheduled quarterly reporting for 45 leaking underground storage tank (LUST) cases under regulatory direction. Prepared Groundwater Monitoring Reports, NPDES Quarterly Reports, Subsurface Investigation Reports, Remediation Work Plans, Sensitive Receptor Surveys, and UST Cleanup Fund submittals. Collected soil and groundwater samples for laboratory analysis.

- Performed regulatory compliance audits for a major telecommunications carrier. Provided solutions and established protocols for ensuring compliance.

- Laboratory Instructor for Introductory Geology and Environmental Science courses at California State University, Chico.

Education

Bachelor of Arts, Public Administration & Economics, San Diego State University
Executive MBA Program, 2000-2003

Highlights

Over 20 years of experience in the environmental and engineering consulting industry
Property Condition Assessments (PCAs)
Fannie Mae, Freddie Mac, and HUD due diligence

Experience Summary

Mr. Lambson is a true veteran of the commercial real estate services industry. He has over 20 years of experience managing and performing environmental and engineering consulting projects on a national level. Mr. Lambson serves as a Principal for Partner and is located in Partner's San Diego County office. Mr. Lambson currently provides client management and consulting to a nationwide client base and specializes in advising "equity" clients during the acquisition phase of commercial property transactions in the U.S., Mexico, and Canada.

Mr. Lambson has assisted clients on over 10,000 commercial real estate transactions throughout his career. His due diligence resume includes experience at all levels, and includes advising REITs, developers, property managers, retail companies, commercial real estate brokers, mortgage brokers, attorneys, lenders, universities, and real estate investment groups with the following nationwide services:

- Property Condition Assessments (PCAs)
- Individual Building System Inspections for Roof, Mechanical Electrical Plumbing (MEP), Elevator, Structure, Façade, and ADA/Accessibility
- Phase I Environmental Site Assessments (ESAs)
- Phase II Subsurface Investigations (Soil and groundwater sampling and analysis)
- Phase III Environmental Remediation Services
- Asbestos, Lead, Radon, Mold Sampling
- Seismic and Structural Assessments (PMLs)
- Energy Audits, Benchmarking, AB1103 Energy Disclosure, and LEED-related services
- Hydrology, Water Conservation and Efficiency
- Fannie Mae / Freddie Mac / HUD Due Diligence
- Geotechnical and Soils Reports
- Zoning Reports
- ALTA Surveys

Building Sciences

Property Condition Assessment, MEP Report, Roof Report, Elevator Report, Structural and Seismic Assessment for a high-profile Class A office campus acquisition in the San Francisco Bay Area

ADA Compliance and Accessibility Reviews for a national bank branch portfolio

Fannie Mae Property Condition / Physical Needs Assessment services for a 5400-unit multifamily portfolio in Nevada

Environmental Assessments
Phase I and Phase II Environmental Assessments for a 75-acre aerospace facility in the Northwest United States

Over 500 Phase I Environmental Site Assessments for a national fast-food chain

Environmental consulting for over 1 million acres of desert land in California, Nevada, and Arizona

Land Surveys
ALTA Surveys for 2400-unit apartment portfolio in the Midwest

Multi-Site Portfolios
113-site office portfolio acquisition for a national REIT

122-site hotel portfolio for a national lending institution

55-site hotel portfolio acquisition for a private investment group

68-site healthcare portfolio acquisition for a national REIT

50-site country club/golf course acquisition for a private investment group

Energy and Water Efficiency
Energy & Water consulting for a national property owner that operates and manages 30 retail and office centers on the West Coast and Texas

Affiliations

National Association of Real Estate Investment Trusts (NAREIT)
International Council of Shopping Centers (ICSC)
U.S Green Building Council (USGBC)
Society of Industrial and Office Realtors, San Diego County (SIOR)
National Association of Industrial & Office Parks, Southern California (NAIOP)
San Diego Habitat Conservancy, Board of Directors. 2010 - 2014

Speaking

Bisnow Conference, Panel Moderator, La Jolla, CA, October 2014. Moderated panel on Southern California Real Estate Trends.

Globestreet, ICSC Western States Conference, San Diego, CA May 2013. Video interview regarding retail real estate trends and due diligence.

Publications

Shopping Centers Today, 2010. Authored article on LEED applications for shopping centers and retail assets.

Contact

mlambson@partneresi.com

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

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 CASC — Date 2/25/2022

Designed by CS — Case No

Company Project Number/Name 1494-0008

BMP Identification

BMP NAME / ID MWS 1

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}= 0.60 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)*
A	*53244*	*Ornamental Landscaping*	*0.1*	*0.11*	*5881.2*			
B	*154831*	*Roofs*	*1*	*0.89*	*138109.3*			
C	*137355*	*Concrete or Asphalt*	*1*	*0.89*	*122520.7*			
	345430	***Total***			**266511.2**	**0.60**	***13325.6***	***40,277.00***

Notes:

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 CASC | Date 2/25/2022

Designed by CS | Case No

Company Project Number/Name 1494-0008

BMP Identification

BMP NAME / ID MWS 2

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}= 0.60 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)*
A	*26696*	*Ornamental Landscaping*	*0.1*	*0.11*	*2948.8*			
B	*80090*	*Roofs*	*1*	*0.89*	*71440.3*			
C	*77260*	*Concrete or Asphalt*	*1*	*0.89*	*68915.9*			
	184046	***Total***			**143305**	**0.60**	***7165.3***	***21,605.00***

Notes:

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

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1494-0008 PARCEL 1

MENIFEE, CA

MC-4500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-4500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

1. STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

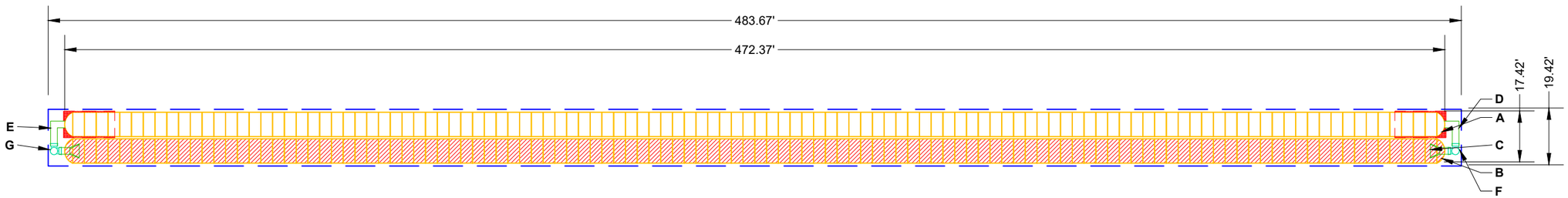
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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PROPOSED LAYOUT		PROPOSED ELEVATIONS	
232	STORMTECH MC-4500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	63.05
4	STORMTECH MC-4500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	58.55
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	58.05
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	58.05
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	58.05
40277	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	57.05
		TOP OF MC-4500 CHAMBER:	56.05
		24" x 24" TOP MANIFOLD INVERT:	52.97
		24" x 24" TOP MANIFOLD INVERT:	52.97
9391	SYSTEM AREA (SF)	24" ISOLATOR ROW PLUS INVERT:	51.24
1006.2	SYSTEM PERIMETER (ft)	24" ISOLATOR ROW PLUS INVERT:	51.24
		BOTTOM OF MC-4500 CHAMBER:	51.05
		BOTTOM OF STONE:	50.30

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	24" TOP PARTIAL CUT END CAP, PART#: MC4500IEPP24T / TYP OF ALL 24" TOP CONNECTIONS	23.05"	
PREFABRICATED END CAP	B	24" BOTTOM PARTIAL CUT END CAP, PART#: MC4500IEPP24B / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	2.26"	
FLAMP	C	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MC450024RAMP (TYP 4 PLACES)		
MANIFOLD	D	24" x 24" TOP MANIFOLD, ADS N-12	23.05"	
MANIFOLD	E	24" x 24" TOP MANIFOLD, ADS N-12	23.05"	
NYLOPLAST (INLET W/ ISO PLUS ROW)	F	30" DIAMETER (24.00" SUMP MIN)		9.5 CFS IN
NYLOPLAST (INLET W/ ISO PLUS ROW)	G	30" DIAMETER (24.00" SUMP MIN)		9.5 CFS IN



ISOLATOR ROW PLUS
(SEE DETAIL)

PLACE MINIMUM 17.50' OF ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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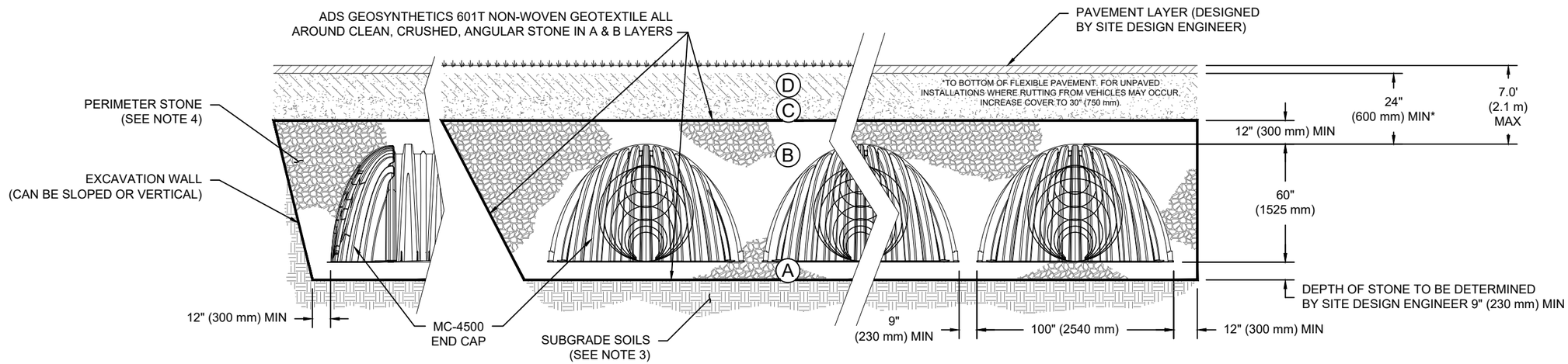
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1-800-733-7473

0 40' 80'

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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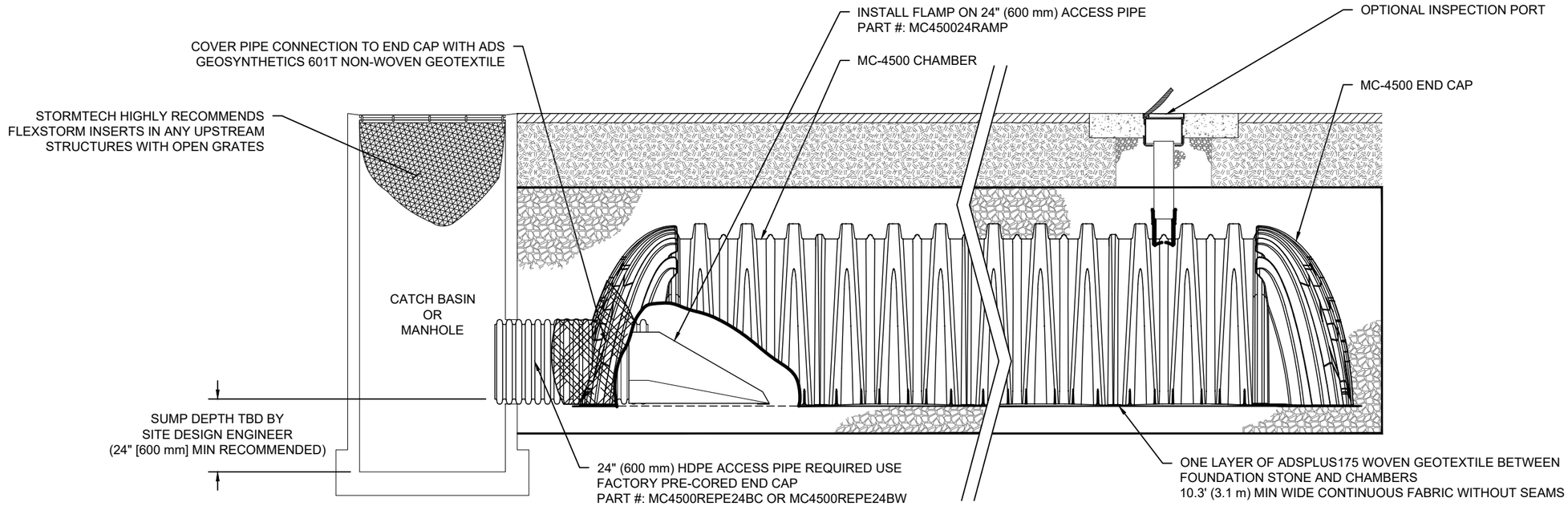
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MC-4500 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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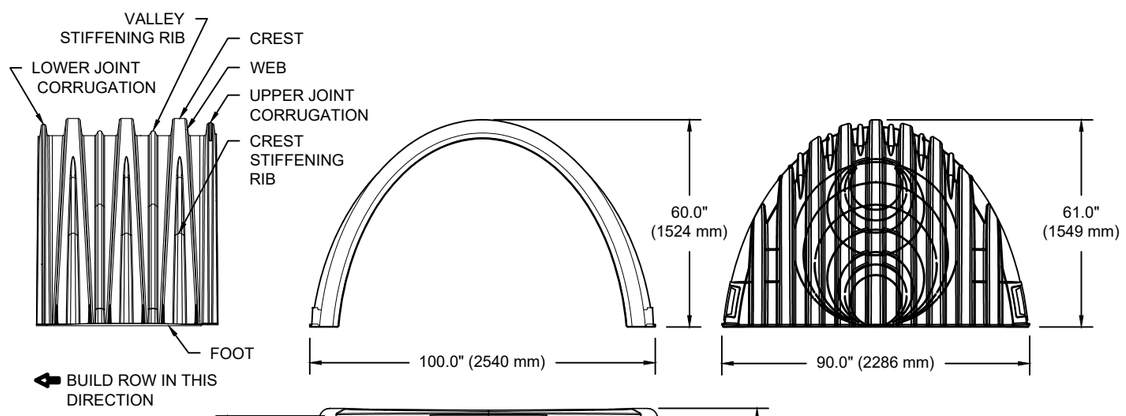
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MC-4500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT (NOMINAL)	125.0 lbs.	(56.7 kg)

NOMINAL END CAP SPECIFICATIONS

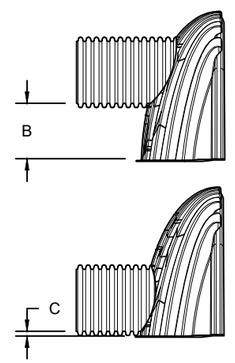
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC4500IEPP06B		---	0.86" (22 mm)
MC4500IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC4500IEPP08B		---	1.01" (26 mm)
MC4500IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC4500IEPP10B		---	1.33" (34 mm)
MC4500IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC4500IEPP12B		---	1.55" (39 mm)
MC4500IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC4500IEPP15B		---	1.70" (43 mm)
MC4500IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC4500IEPP18TW			
MC4500IEPP18B		---	1.97" (50 mm)
MC4500IEPP18BW			
MC4500IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC4500IEPP24TW			
MC4500IEPP24B		---	2.26" (57 mm)
MC4500IEPP24BW			
MC4500IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC4500IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC4500IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

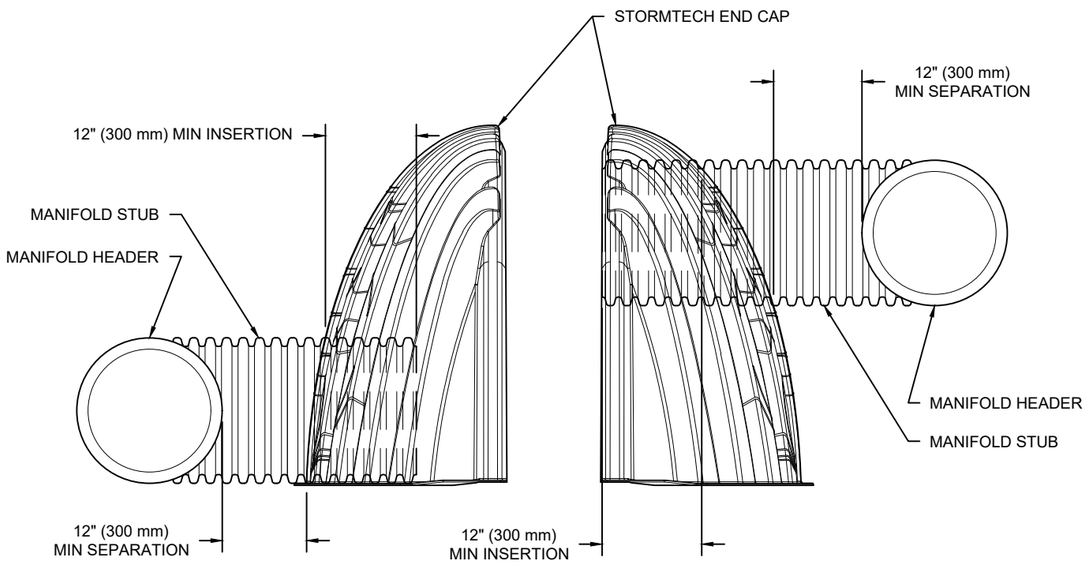
NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

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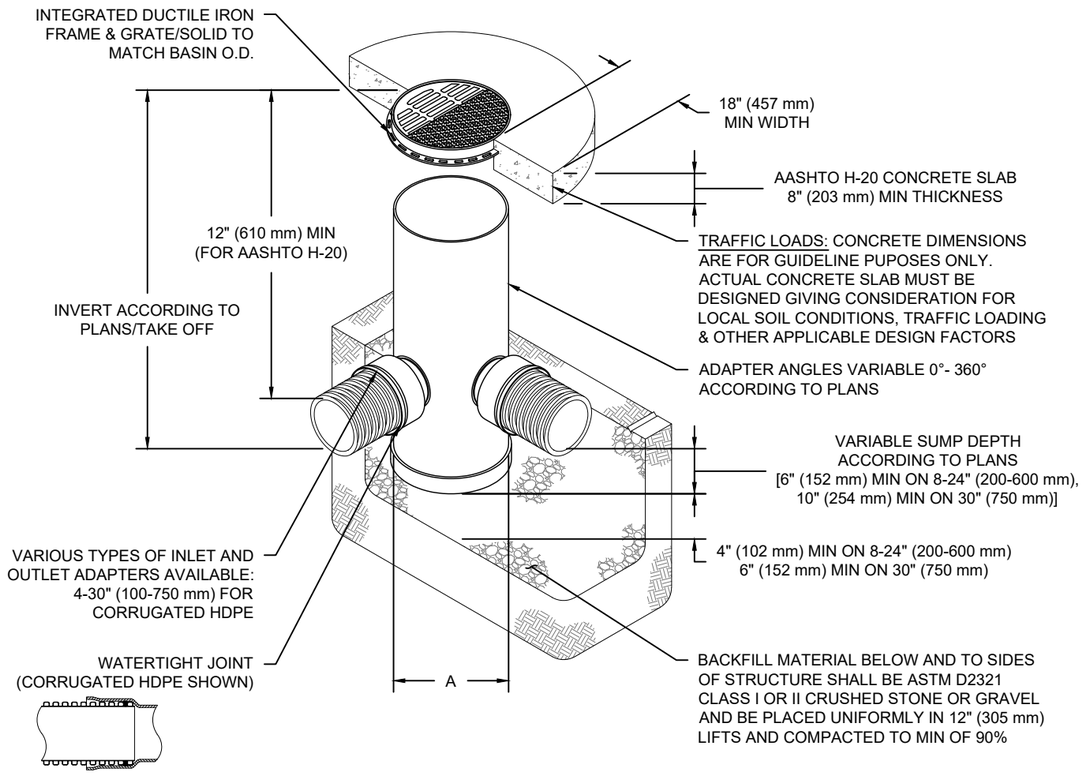
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NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

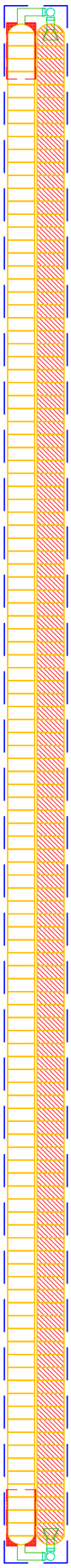
A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

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1494-0008 PARCEL 3

MENIFEE, CA

MC-4500 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-4500.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-4500 CHAMBER SYSTEM

1. STORMTECH MC-4500 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-4500 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-4500 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-3500/MC-4500 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

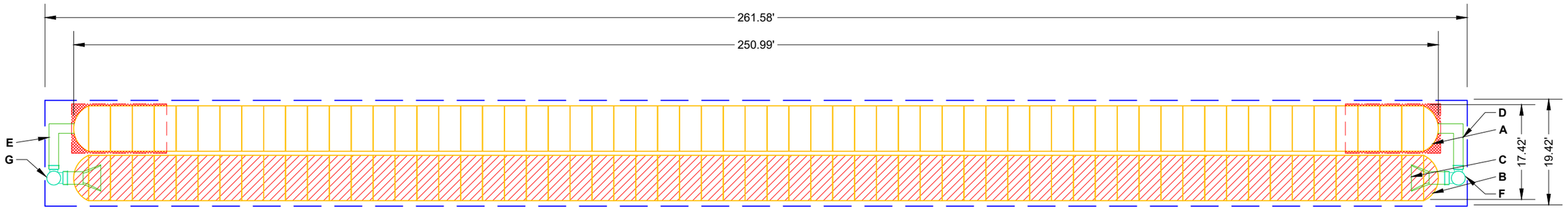
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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PROPOSED LAYOUT		PROPOSED ELEVATIONS	
122	STORMTECH MC-4500 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	67.50
4	STORMTECH MC-4500 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	63.00
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	62.50
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	62.50
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	62.50
21605	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	61.50
		TOP OF MC-4500 CHAMBER:	60.50
		18" x 18" TOP MANIFOLD INVERT:	57.95
		18" x 18" TOP MANIFOLD INVERT:	57.95
5079	SYSTEM AREA (SF)	24" ISOLATOR ROW PLUS INVERT:	55.69
562.0	SYSTEM PERIMETER (ft)	24" ISOLATOR ROW PLUS INVERT:	55.69
		BOTTOM OF MC-4500 CHAMBER:	55.50
		BOTTOM OF STONE:	54.75

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	18" TOP PARTIAL CUT END CAP, PART#: MC4500IEPP18T / TYP OF ALL 18" TOP CONNECTIONS	29.37"	
PREFABRICATED END CAP	B	24" BOTTOM PARTIAL CUT END CAP, PART#: MC4500IEPP24B / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	2.26"	
FLAMP	C	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MC450024RAMP (TYP 4 PLACES)		
MANIFOLD	D	18" x 18" TOP MANIFOLD, ADS N-12	29.36"	
MANIFOLD	E	18" x 18" TOP MANIFOLD, ADS N-12	29.36"	
NYLOPLAST (INLET W/ ISO PLUS ROW)	F	30" DIAMETER (24.00" SUMP MIN)		5.5 CFS IN
NYLOPLAST (INLET W/ ISO PLUS ROW)	G	30" DIAMETER (24.00" SUMP MIN)		5.5 CFS IN



ISOLATOR ROW PLUS
(SEE DETAIL)

PLACE MINIMUM 17.50' OF ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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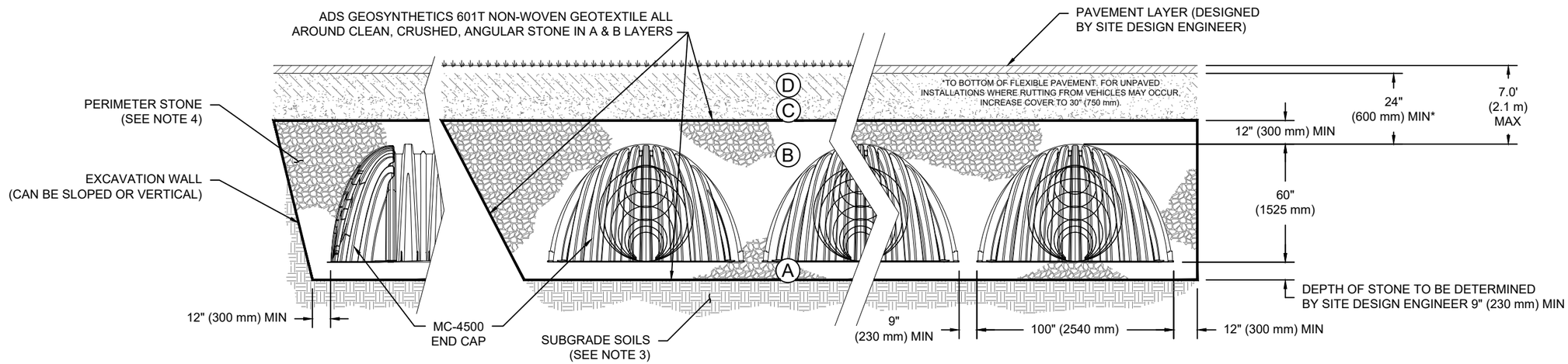
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0 20' 40'

ACCEPTABLE FILL MATERIALS: STORMTECH MC-4500 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418-16a, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-4500 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 500 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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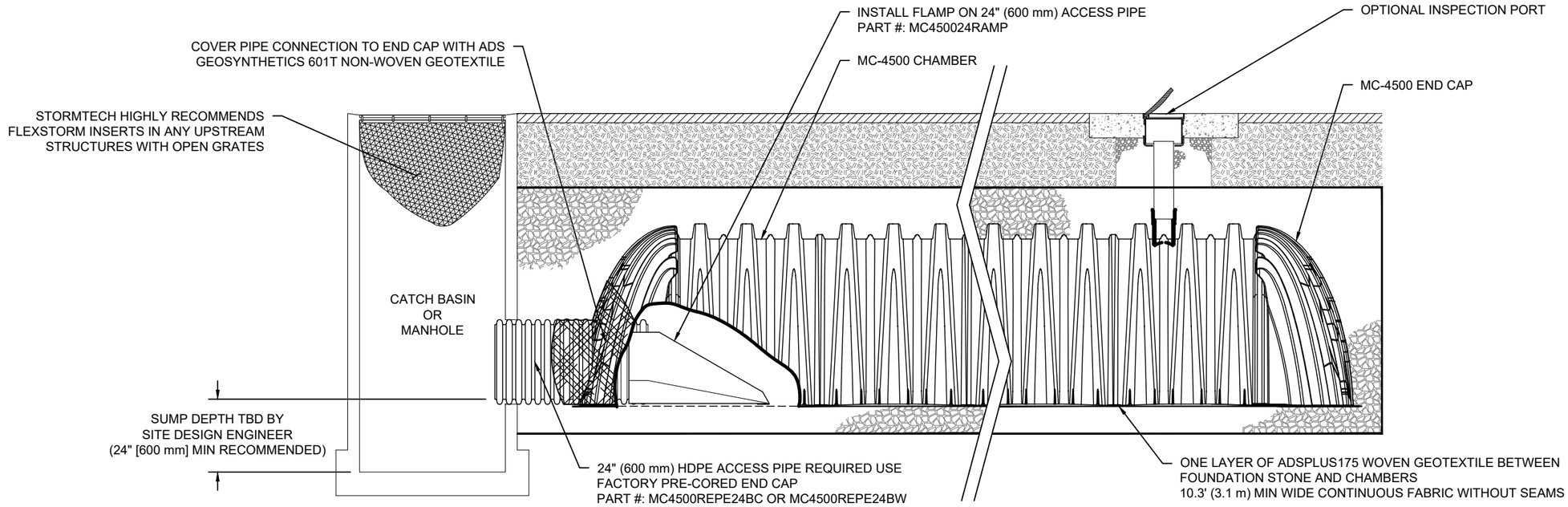
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MC-4500 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

1494-0008 PARCEL 3
MENIFEE, CA
DATE:
DRAWN: RU
PROJECT #:
CHECKED: N/A

DESCRIPTION	CHK	DRW	DATE

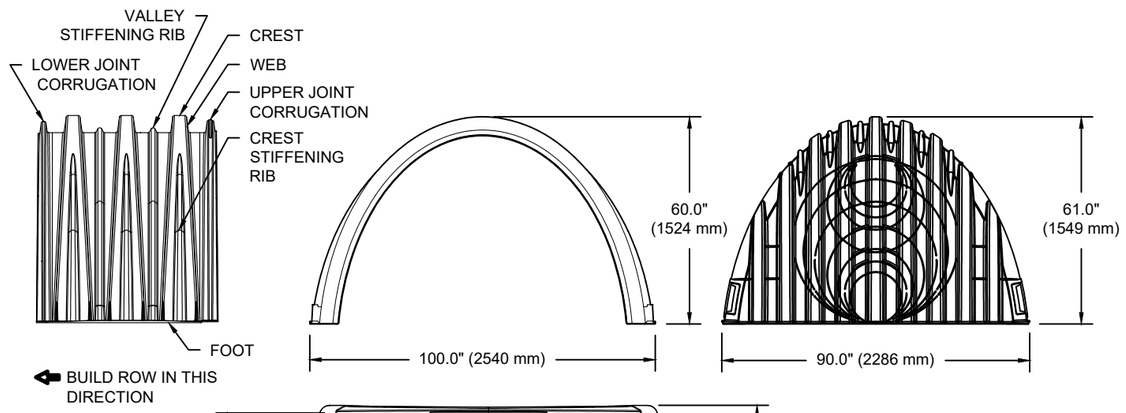
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MC-4500 TECHNICAL SPECIFICATION

NTS



NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 48.3"	(2540 mm X 1524 mm X 1227 mm)
CHAMBER STORAGE	106.5 CUBIC FEET	(3.01 m³)
MINIMUM INSTALLED STORAGE*	162.6 CUBIC FEET	(4.60 m³)
WEIGHT (NOMINAL)	125.0 lbs.	(56.7 kg)

NOMINAL END CAP SPECIFICATIONS

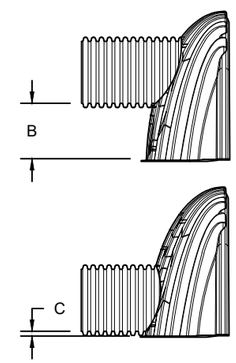
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC4500IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC4500IEPP06B		---	0.86" (22 mm)
MC4500IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC4500IEPP08B		---	1.01" (26 mm)
MC4500IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC4500IEPP10B		---	1.33" (34 mm)
MC4500IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC4500IEPP12B		---	1.55" (39 mm)
MC4500IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC4500IEPP15B		---	1.70" (43 mm)
MC4500IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC4500IEPP18TW			
MC4500IEPP18B		---	1.97" (50 mm)
MC4500IEPP18BW			
MC4500IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC4500IEPP24TW			
MC4500IEPP24B		---	2.26" (57 mm)
MC4500IEPP24BW			
MC4500IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC4500IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC4500IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

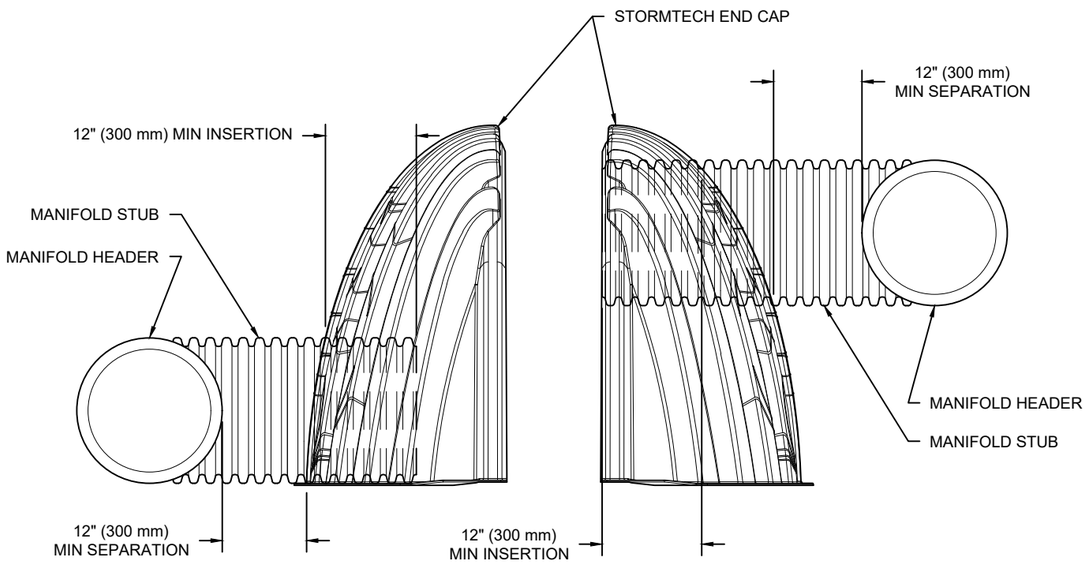
NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PARTIAL CUT INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-4500 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

1494-0008 PARCEL 3
MENIFEE, CA
DATE:
DRAWN: RU
PROJECT #:
CHECKED: N/A

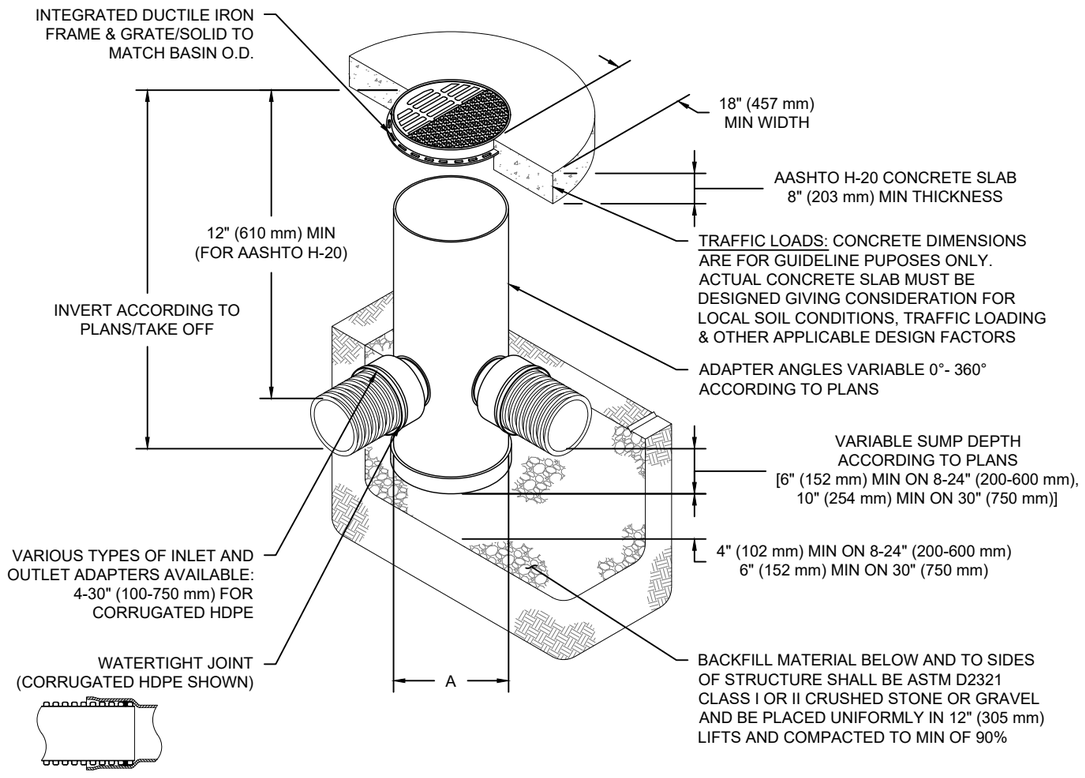
DESCRIPTION	CHK	DRW	DATE

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NYLOPLAST DRAIN BASIN

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NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

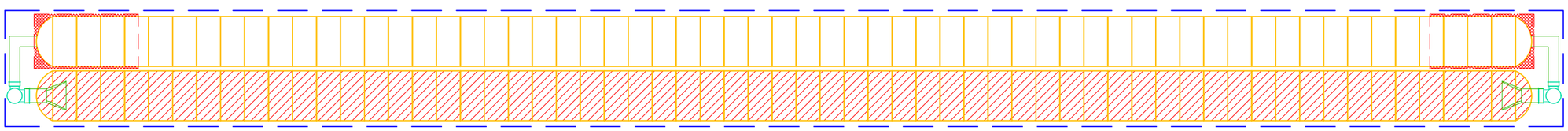
A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

1494-0008 PARCEL 3
MENIFEE, CA
DATE:
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PROJECT #:
CHECKED: N/A

DATE	DRW	CHK	DESCRIPTION

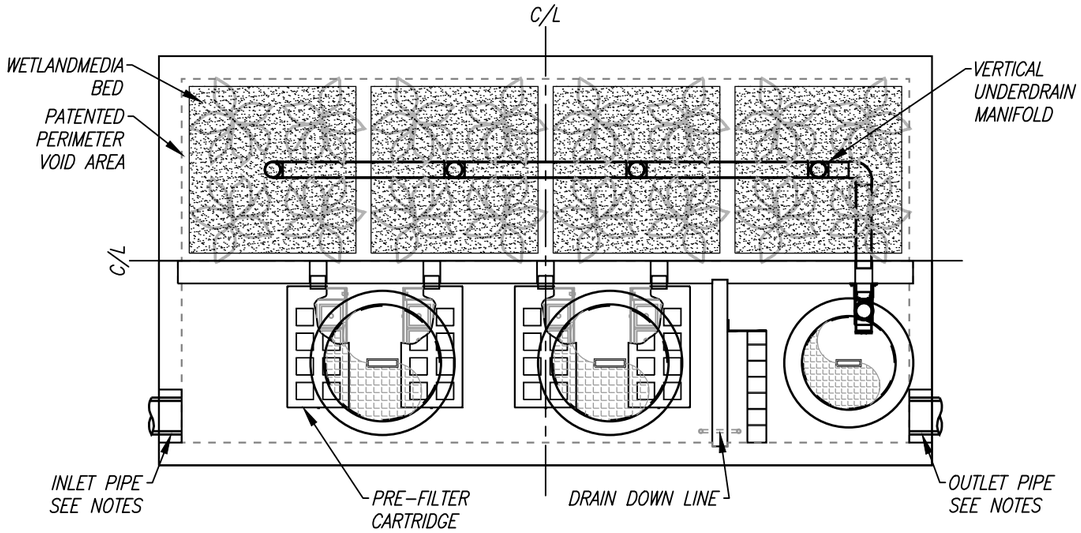
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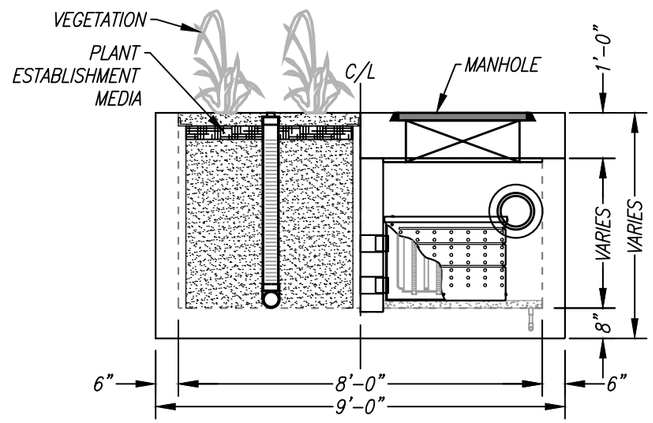


SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
20151		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	2EA ø30"	OPEN PLANTER	ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



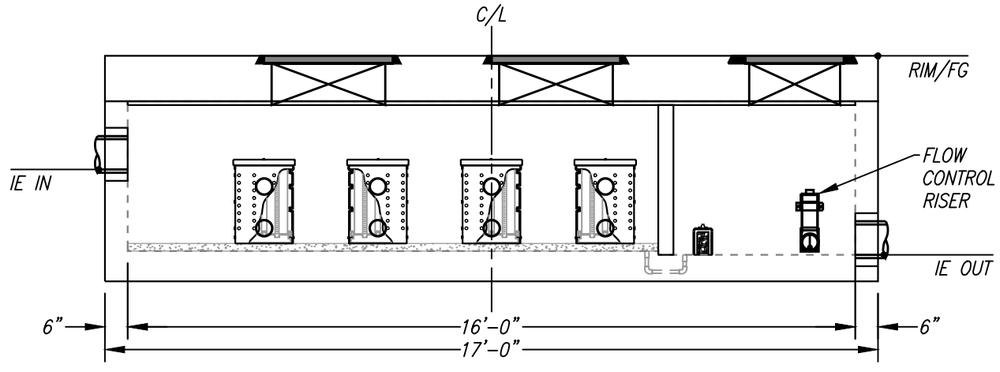
LEFT END VIEW

INSTALLATION NOTES

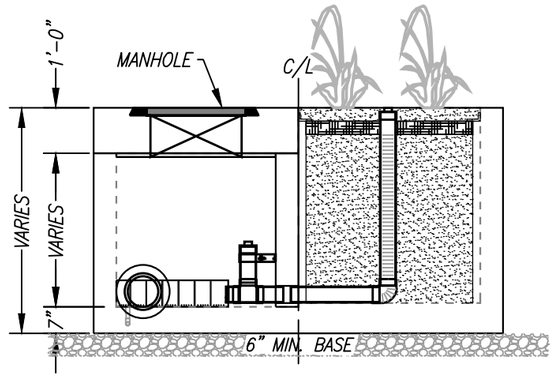
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
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6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

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ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	20151
DRAINDOWN DURATION (HOURS)	48
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	26.17
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF)	0.26

MODULAR WETLANDS

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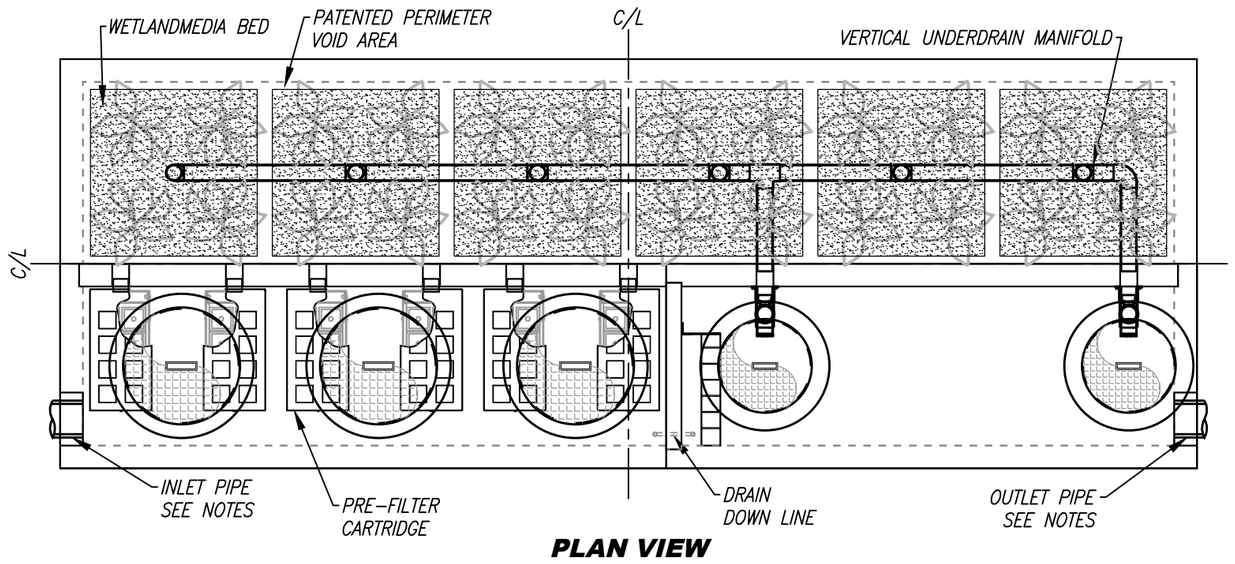
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STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

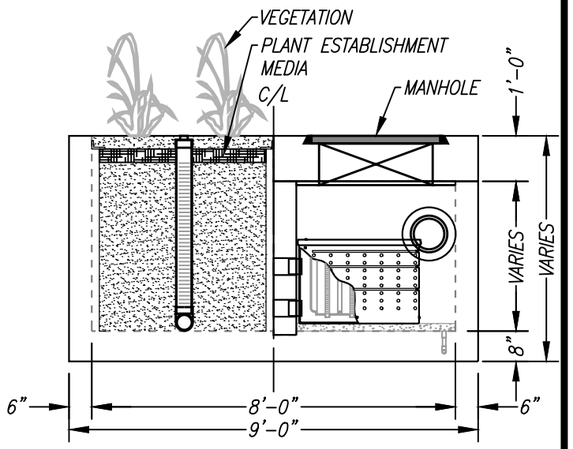
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SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
20151		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	3EA ø30"	OPEN PLANTER	2EA ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



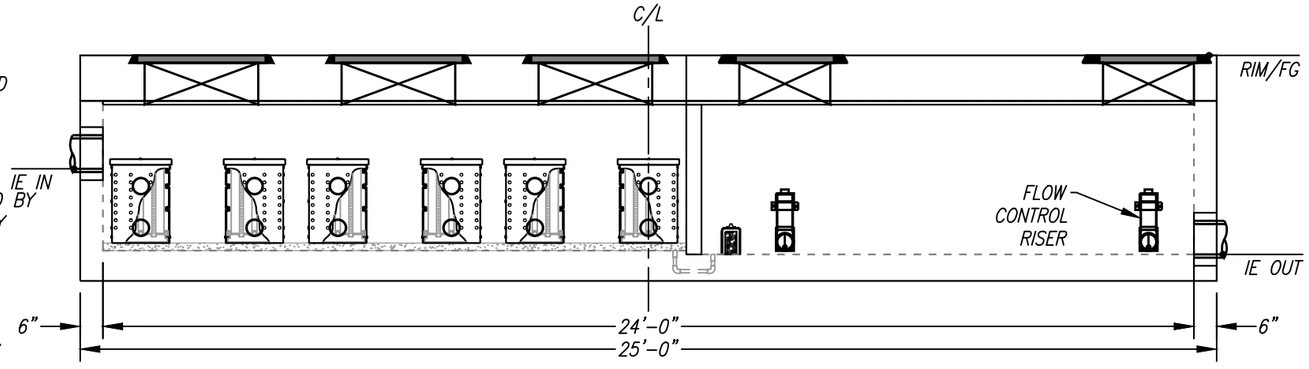
LEFT END VIEW

INSTALLATION NOTES

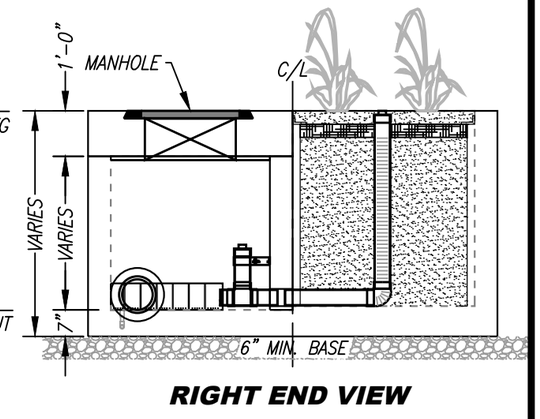
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ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	20151
DRAINDOWN DURATION (HOURS)	48
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	26.17
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF)	0.26

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MWS-L-8-24-V
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

5/24/19TOLEF

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

The project will use underground detention chambers to detain runoff and slowly release via proposed pump & Modular Wetlands System into Goetz Road (For Drainage Area 1) or into Corsica Lane (For Drainage Area 2). The proposed pumping system will be designed to restrict outflows to allowable limits: for HCOC, the 2-year, 24-hour peak flow (proposed) can be up to 110% of the existing condition 2-year, 24-hour peak; to meet the County of Riverside Increased Runoff Criteria, proposed 2-year, 5-year, and 10-year flows for the 1-hour, 3-hour, 6-hour, and 24-hour storms is not to exceed existing peak flows.

Detailed analysis and design will be provided in the final drainage report and WQMP. For preliminary design, the difference in the 10-year, 24-hour storm volumes (existing versus proposed) is used for detention sizing. Refinement of the detention sizing will occur in final design. Design of the proposed pumps will also be part of Final design.

Increased Runoff Calculations

	10 year – 24-hour storm			
	Pre-condition	Post-condition	Difference	Volume of proposed chambers
Volume DA 1 (cf)	48,184	88,726	40,542	40,277
Volume DA 2 (cf)	21,201	41,636	20,435	21,605

	10 year – 24-hour storm	
	Pre-Condition (unmitigated)	Post-Condition (unmitigated)
Flow Rate DA 1 (cfs)	3.206	4.118
Flow Rate DA 2 (cfs)	1.441	1.889

*Proposed detention system will be engineered in Final design to limit the peak flow in the proposed condition to the existing condition peak flow rate for all design storms in the County of Riverside's increased runoff criteria.

HCOC Calculations

	2-year, 24-hour storm		
	Pre-Condition	**Allowable Post-Condition (110% of Pre-Condition) – Pump Limit**	**Post-Condition (unmitigated)**
Flow Rate DA 1 (cfs)	0.233	0.256	2.021
Flow Rate DA 2 (cfs)	0.104	0.114	0.993

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**

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

To be provided at Final Submittal.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

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.

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?

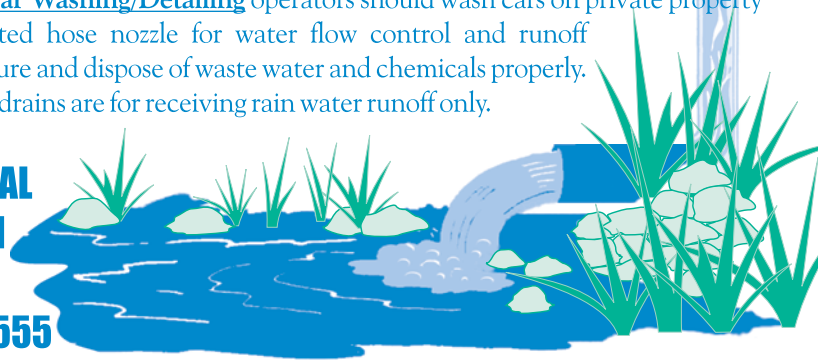
Storm drains are NOT connected to sanitary sewer systems and treatment plants!



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

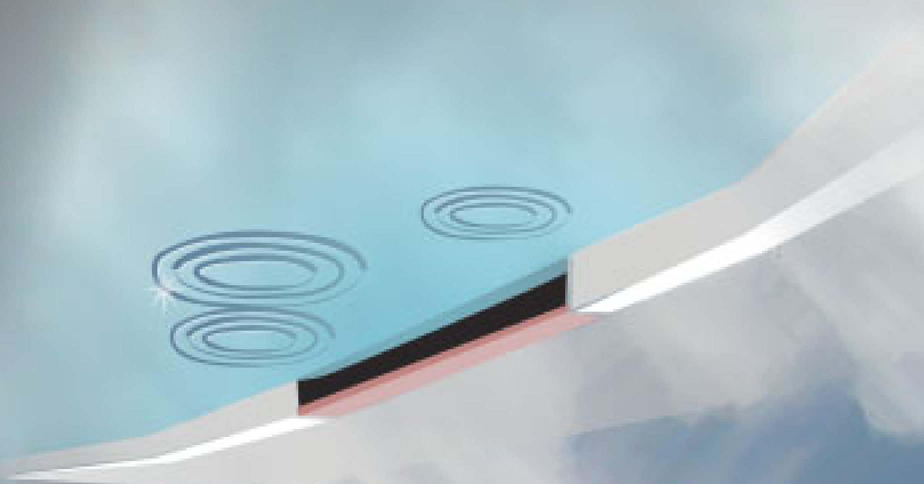
- Prior to any washing, block all storm drains with an impervious barrier such as sandbags or berms, or seal the storm drain with plugs or other appropriate materials.
- Create a containment area with berms and traps or take advantage of a low spot to keep wash water contained.
- Wash vehicles and equipment 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.

After the Storm

A Citizen's Guide to Understanding Stormwater



For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

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THE YEAR OF CLEAN WATER
Celebration + Recommitment

What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution



Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.



- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.



- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions



Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care



Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste



Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.



Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Commercial

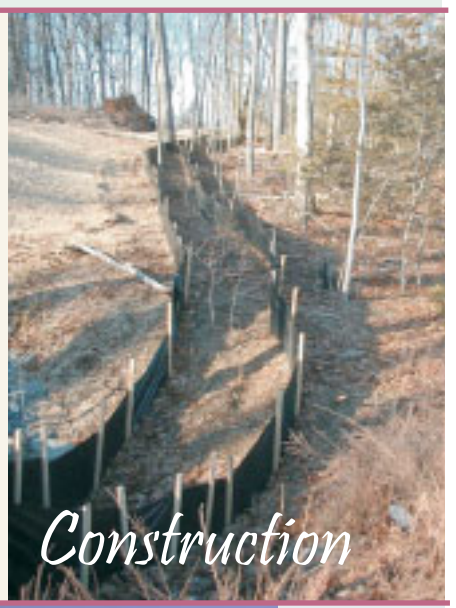
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.





Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



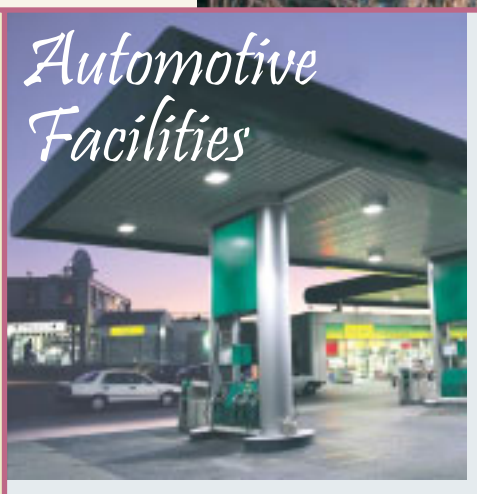
- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

IRRIGATION RUNOFF

STORMWATER FACT SHEET

Report Irrigation Runoff or Stormwater Pollution:
800.506.2555

RIVERSIDE COUNTY
WATERSHED PROTECTION

OVERWATERING

Overwatering causes irrigation runoff that may contain pollutants such as pesticides, herbicides, fertilizers, pet waste, yard waste, and sediments which can be hazardous to residents and harmful to our environment. Runoff can also serve as a transport mechanism for other pollutants already on the ground or in the curb gutter. Irrigation runoff entering the storm drain system is an illicit discharge.

BEST PRACTICES

Urban runoff begins when yards and landscaped areas are over-irrigated. Irrigation systems require regular maintenance and visual inspection of the system should be performed to prevent over-spray, leaks, and other problems that result in runoff to storm drains, curbs and gutters.

You can **prevent pollution** by conserving water on your property. Water during cooler times of the day (before 10am and after 6pm).

- Adjust sprinklers to stop overspray and runoff.
- Make needed repairs immediately.
- Use drip irrigation, soaker hoses, or micro-spray systems.
- Use an irrigation timer to pre-set watering times.
- Use a control nozzle or similar mechanism when watering by hand.
- Switch to a water-wise landscape - native plants need less fertilizers, herbicides, pesticides and water.







PROTECT OUR WATERSHED

Many people think that when water flows into a storm drain it is treated, but the storm drain system and the sanitary sewer system are not connected. Everything that enters storm drains flows untreated directly into our creeks, rivers, lakes, beaches and ultimately the ocean. Storm water often contains pollutants, including chemicals, trash, and automobile fluids, all of which pollute our watershed and harm fish and wildlife.

Whether at home or work, you can help reduce pollution and improve water quality by using the above Best Management Practices (BMP's) as part of your daily clean up and maintenance routine.

Non-Stormwater Discharges SC-10

Description

Non-stormwater discharges (NSWDs) are flows that do not consist entirely of stormwater. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain if local regulations allow. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include: potable water sources, fire hydrant flushing, air conditioner condensate, landscape irrigation drainage and landscape watering, emergency firefighting, etc. as discussed in Section 2.

However there are certain non-stormwater discharges that pose an environmental concern. These discharges may originate from illegal dumping of industrial material or wastes and illegal connections such as internal floor drains, appliances, industrial processes, sinks, and toilets that are illegally connected to the nearby storm drainage system through on-site drainage and piping. These unauthorized discharges (examples of which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants into storm drains.

Non-stormwater discharges will need to be addressed through a combination of detection and elimination. The ultimate goal is to effectively eliminate unauthorized non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges of

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION®

pollutants on streets and into the storm drain system and downstream water bodies.

Approach

Initially the Discharger must make an assessment of non-stormwater discharges to determine which types must be eliminated or addressed through BMPs. The focus of the following approach is the elimination of unauthorized non-stormwater discharges. See other BMP Fact Sheets for activity-specific pollution prevention procedures.

General Pollution Prevention Protocols

- Implement waste management controls described in SC-34 Waste Handling and Disposal.

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially those that are not classified as hazardous. These are often not responded to as effectively as they need to be.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled or demarcated next to them to warn against ignorant or unintentional dumping of pollutants into the storm drainage system.

- Manage and control sources of water such as hose bibs, faucets, wash racks, irrigation heads, etc. Identify hoses and faucets in the SWPPP, and post signage for appropriate use.

Non-Stormwater Discharge Investigation Protocols

Identifying the sources of non-stormwater discharges requires the Discharger to conduct an investigation of the facility at regular intervals. There are several categories of non-stormwater discharges:

- Visible, easily identifiable discharges, typically generated as surface runoff, such as uncontained surface runoff from vehicle or equipment washing; and

- Non-visible, (e.g., subsurface) discharges into the site drainage system through a variety of pathways that are not obvious.

The approach to detecting and eliminating non-stormwater discharges will vary considerably, as discussed below:

Visible and identifiable discharges

- Conduct routine inspections of the facilities and of each major activity area and identify visible evidence of unauthorized non-stormwater discharges. This may include:

  - ✓ Visual observations of actual discharges occurring;

- ✓ Evidence of surface staining, discoloring etc. that indicates that discharges have occurred;
- ✓ Pools of water in low lying areas when a rain event has not occurred; and
- ✓ Discussions with operations personnel to understand practices that may lead to unauthorized discharges.

- ☐ If evidence of non-stormwater discharges is discovered:
  - ✓ Document the location and circumstances using Worksheets 5 and 6 (Section 2 of the manual), including digital photos;
  - ✓ Identify and implement any quick remedy or corrective action (e.g., moving uncovered containers inside or to a proper location); and
  - ✓ Develop a plan to eliminate the discharge. Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge.
- ☐ Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge. Make sure the facility SWPPP is up-to-date and includes applicable BMPs to address the non-stormwater discharge.

Other Illegal Discharges (Non visible)

Illicit Connections

- ☐ Locate discharges from the industrial storm drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- ☐ Isolate problem areas and plug illicit discharge points.
- ☐ Locate and evaluate discharges to the storm drain system.
- ☐ Visual Inspection and Inventory:
  - ✓ Inventory and inspect each discharge point during dry weather.
  - ✓ Keep in mind that drainage from a storm event can continue for a day or two following the end of a storm and groundwater may infiltrate the underground stormwater collection system.
  - ✓ Non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- ☐ A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system.

- Inspect the path of loading/unloading area drain inlets and floor drains in older buildings.

- Never assume storm drains are connected to the sanitary sewer system.

Monitoring for investigation/detection of illegal discharges

- If a suspected illegal or unknown discharge is detected, monitoring of the discharge may help identify the content and/or suggest the source. This may be done with a field screening analysis, flow meter measurements, or by collecting a sample for laboratory analysis. Section 5 and Appendix D describe the necessary field equipment and procedures for field investigations.

- Investigative monitoring may be conducted over time. For example if, a discharge is intermittent, then monitoring might be conducted to determine the timing of the discharge to determine the source.

- Investigative monitoring may be conducted over a spatial area. For example, if a discharge is observed in a pipe, then monitoring might be conducted at accessible upstream locations in order to pinpoint the source of the discharge.

- Generally, investigative monitoring requiring collection of samples and submittal for lab analysis requires proper planning and specially trained staff.

Smoke Testing

Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two piping systems. Smoke testing is generally performed at a downstream location and the smoke is forced upstream using blowers to create positive pressure. The advantage to smoke testing is that it can potentially identify multiple potential discharge sources at once.

- Smoke testing uses a harmless, non-toxic smoke cartridges developed specifically for this purpose.

- Smoke testing requires specialized equipment (e.g., cartridges, blowers) and is generally only appropriate for specially trained staff.

- A Standard Operating Procedure (SOP) for smoke testing is highly desirable. The SOP should address the following elements:

  - ✓ Proper planning and notification of nearby residents and emergency services is necessary since introducing smoke into the system may result in false alarms;

  - ✓ During dry weather, the stormwater collection system is filled with smoke and then traced back to sources;

- ✓ Temporary isolation of segments of pipe using sand bags is often needed to force the smoke into leaking pipes; and

- ✓ The appearance of smoke in a waste vent pipe, at a sewer manhole, or even the base of a toilet indicates that there may be a connection between the sanitary and storm water systems.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct smoke testing and they should be contacted if cross connections with the sanitary sewer are suspected. See SC-44 Drainage System Maintenance for more information.

Dye Testing

- Dye testing is typically performed when there is a suspected specific pollutant source and location (i.e., leaking sanitary sewer) and there is evidence of dry weather flows in the stormwater collection system.

- Dye is released at a probable upstream source location, either the facility's sanitary or process wastewater system. The dye must be released with a sufficient volume of water to flush the system.

- Operators then visually examine the downstream discharge points from the stormwater collection system for the presence of the dye.

- Dye testing can be performed informally using commercially available products in order to conduct an initial investigation for fairly obvious cross-connections.

- More detailed dye testing should be performed by properly trained staff and follow SOPs. Specialized equipment such as fluorometers may be necessary to detect low concentrations of dye.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct dye testing and they should be contacted if cross connections with the sanitary sewer are suspected.

TV Inspection of Drainage System

- Closed Circuit Television (CCTV) can be employed to visually identify illicit connections to the industrial storm drainage system. Two types of CCTV systems are available: (1) a small specially designed camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping, or (2) a larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe.

- CCTV systems often include a high-pressure water jet and camera on a flexible cable. The water jet cleans debris and biofilm off the inside of pipes so the camera can take video images of the pipe condition.

- CCTV units can detect large cracks and other defects such as offsets in pipe ends caused by root intrusions or shifting substrate.
- CCTV can also be used to detect dye introduced into the sanitary sewer.
- CCTV inspections require specialized equipment and properly trained staff and are generally best left to specialized contractors or municipal public works staff.

Illegal Dumping

- Substances illegally dumped on streets and into the storm drain systems and creeks may include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. These wastes can cause stormwater and receiving water quality problems as well as clog the storm drain system itself.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills);
  - ✓ An anonymous tip/reporting mechanism; and
  - ✓ Evidence of responsible parties (e.g., tagging, encampments, etc.).
- One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people at the facility who are aware of the problem and who have the tools to at least identify the incident, if not correct it. Therefore, train field staff to recognize and report the incidents.

Once a site has been cleaned:

- Post "No Dumping" signs with a phone number for reporting dumping and disposal.
- Landscaping and beautification efforts of hot spots may also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.
- See fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Conduct field investigations of the industrial storm drain system for potential sources of non-stormwater discharges.
- Pro-actively conduct investigations of high priority areas. Based on historical data, prioritize specific geographic areas and/or incident type for pro-active investigations.



Spill and Leak Prevention and Response

- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See SC-11 Spill Prevention Control and Cleanup.



Employee Training Program

- Training of technical staff in identifying and documenting illegal dumping incidents is required. The frequency of training must be presented in the SWPPP, and depends on site-specific industrial materials and activities.
- Consider posting a quick reference table near storm drains to reinforce training.
- Train employees to identify non-stormwater discharges and report discharges to the appropriate departments.
- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan. Employees should be able to identify work/jobs with high potential for spills and suggest methods to reduce possibility.
- Determine and implement appropriate outreach efforts to reduce non-permissible non-stormwater discharges.

- Conduct spill response drills annually (if no events occurred) in order to evaluate the effectiveness of the plan.
- When a responsible party is identified, educate the party on the impacts of his or her actions.



Quality Assurance and Record Keeping

Performance Evaluation

- Annually review internal investigation results; assess whether goals were met and what changes or improvements are necessary.
- Obtain feedback from personnel assigned to respond to, or inspect for, illicit connections and illegal dumping incidents.
- Develop document and data management procedures.
- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained, and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Annually document and report the results of the program.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.
- Document training activities.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Many facilities do not have accurate, up-to-date 'as-built' plans or drawings which may be necessary in order to conduct non-stormwater discharge assessments.
  - ✓ Online tools such as Google Earth™ can provide an aerial view of the facility and may be useful in understanding drainage patterns and potential sources of non-stormwater discharges
  - ✓ Local municipal jurisdictions may have useful drainage systems maps.

- Video surveillance cameras are commonly used to secure the perimeter of industrial facilities against break-ins and theft. These surveillance systems may also be useful for capturing illegal dumping activities. Minor, temporary adjustments to the field of view of existing surveillance camera systems to target known or suspected problem areas may be a cost-effective way of capturing illegal dumping activities and identifying the perpetrators.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital facility cost requirements may be minimal unless cross-connections to storm drains are detected.
- Indoor floor drains may require re-plumbing if cross-connections are detected.
- Leaky sanitary sewers will require repair or replacement which can have significant costs depending on the size and industrial activity at the facility.

Maintenance (including administrative and staffing)

- The primary effort is for staff time and depends on how aggressively a program is implemented.
- Costs for containment, and disposal of any leak or discharge is borne by the Discharger.
- Illicit connections can be difficult to locate especially if there is groundwater infiltration.
- Illegal dumping and illicit connection violations requires technical staff to detect and investigate them.

Supplemental Information

Permit Requirements

The IGP authorizes certain Non-Storm Water Discharges (NSWDs) provided BMPs are included in the SWPPP and implemented to:

- Reduce or prevent the contact of authorized NSWDs with materials or equipment that are potential sources of pollutants;
- Reduce, to the extent practicable, the flow or volume of authorized NSWDs;
- Ensure that authorized NSWDs do not contain quantities of pollutants that cause or contribute to an exceedance of a water quality standards (WQS); and,

- Reduce or prevent discharges of pollutants in authorized NSWDs in a manner that reflects best industry practice considering technological availability and economic practicability and achievability."

References and Resources

Center for Watershed Protection, 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, EPA Cooperative Agreement X-82907801-0.

Dublin San Ramon Sanitation District. http://www.dsrsd.com/wwrw/smoketest.html.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*, Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp.org.

Southern California Coastal Water Research Project, 2013. *The California Microbial Source Identification Manual: A Tiered Approach to Identifying Fecal Pollution Sources to Beaches,* Technical Report 804.

The Storm Water Managers Resource Center, http://www.stormwatercenter.net/.

US EPA. National Pollutant Discharge Elimination System. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=111.

WEF Press Alexandria, Virginia, 2009.Existing Sewer Evaluation and Rehabilitation: *WEF Manual of Practice No. FD-6 ASCE/EWRI Manuals and Reports on Engineering Practice No. 62, Third Edition.*

Outdoor Loading/Unloading SC-30

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by wind, stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- Limit exposure of material to rainfall whenever possible.
- Prevent stormwater run-on.
- Check equipment regularly for leaks.



Good Housekeeping

- Develop an operations plan that describes procedures for loading and/or unloading.
- Conduct loading and unloading in dry weather if possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- Consider placing a seal or door skirt between delivery vehicles and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on, which would include grading or berming the area, and position roof downspouts so they direct stormwater away from the loading/unloading areas.
- Have employees load and unload all materials and equipment in covered areas such as building overhangs at loading docks if feasible.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains inlets in the area.
- Grade and/or berm the loading/unloading area with drainage to sump; regularly remove materials accumulated in sump.



Spill Response and Prevention Procedures

- Keep your spill prevention and control plan up-to-date or have an emergency spill cleanup plan readily available, as applicable.
- Contain leaks during transfer.
- Store and maintain appropriate spill cleanup materials in a location that is readily accessible and known to all employees.
- Ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Use drip pans or comparable devices when transferring oils, solvents, and paints.



Material Handling and Waste Management

- Spot clean leaks and drips routinely to prevent runoff of spillage.
- Do not pour liquid wastes into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.

- Do not put used or leftover cleaning solutions, solvents, and automotive fluids in the storm drain or sanitary sewer.
- Collect leaking or dripping fluids in drip pans or containers. Fluids are easier to recycle if kept separate.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave drip pans or other open containers lying around.
- Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:
  - ✓ Use only watertight waste receptacle(s) and keep the lid(s) closed.
  - ✓ Grade and pave the waste receptacle area to prevent run-on of stormwater.
  - ✓ Install a roof over the waste receptacle area.
  - ✓ Install a low containment berm around the waste receptacle area.
  - ✓ Use and maintain drip pans under waste receptacles.
- Post "no littering" signs.
- Perform work area clean-up and dry sweep after daily operations.



Employee Training Program

- Train employees (e.g., fork lift operators) and contractors on proper spill containment and cleanup.
- Have employees trained in spill containment and cleanup present during loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.
- Make sure forklift operators are properly trained on loading and unloading procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document activities performed, quantities of materials removed, and improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Establish procedures to complete logs and file them in the central office.
- Keep accurate logs of daily clean-up operations.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
  - ✓ Designate specific areas for outdoor loading and unloading.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.
- It may not be possible to conduct transfers only during dry weather.
  - ✓ Limit materials and equipment rainfall exposure to all extents practicable.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

Many facilities will already have indoor or covered areas where loading/unloading takes place and will require no additional capital expenditures.

If outdoor activities are required, construction of berms or other means to retain spills and leaks may require appropriate constructed systems for containment. These containment areas may require significant new capital investment.

Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

Most of the operations and maintenance activities associated with implementing this BMP are integrally linked to routine operations as previously described. Therefore additional O&M is not required.

- Conduct regular inspections and make repairs and improvements as necessary.
- Check loading and unloading equipment regularly for leaks.
- Conduct regular broom dry-sweeping of area. Do not wash with water.

Supplemental Information

Loading and Unloading of Liquids

- Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer,

treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - ✓ The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - ✓ The transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
  - ✓ The transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer. A positive control valve should be installed on the drain.
- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:
  - ✓ Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and breaking connections.
  - ✓ Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315*. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: *Best Management Practices*. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/.

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Waste Handling & Disposal SC-34

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Accomplish reduction in the amount of waste generated using the following source controls:
  - ✓ Production planning and sequencing;
  - ✓ Process or equipment modification;
  - ✓ Raw material substitution or elimination;
  - ✓ Loss prevention and housekeeping;
  - ✓ Waste segregation and separation; and
  - ✓ Close loop recycling.
- ☐ Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- ☐ Recycle materials whenever possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Use the entire product before disposing of the container.
- To the extent possible, store wastes under cover or indoors after ensuring all safety concerns such as fire hazard and ventilation are addressed.
- Provide containers for each waste stream at each work station. Allow time after shift to clean area.



Good Housekeeping

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain. Clean in a designated wash area that drains to a clarifier.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- If possible, move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.



Preventative Maintenance

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.

- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, vacuuming, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.



Spill Response and Prevention Procedures

- Keep your spill prevention and plan up-to-date.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - ✓ Vehicles equipped with baffles for liquid waste; and
  - ✓ Trucks with sealed gates and spill guards for solid waste.



Material Handling and Waste Management

Litter Control

- Post “No Littering” signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.

- Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers and protect them from vandalism.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for waste handling and disposal, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.

- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and the types of waste handled. Significant capital costs may be associated with reducing wastes by modifying processes or implementing closed-loop recycling.
- Many facilities will already have indoor covered areas where waste materials will be stored and will require no additional capital expenditures for providing cover.
- If outdoor storage of wastes is required, construction of berms or other means to prevent stormwater run-on and runoff may require appropriate constructed systems for containment.
- Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315,* Revised. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: Best Management Practices. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ☐ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.



Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.

- □ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- □ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

- □ Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- □ Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills); and
  - ✓ Responsible parties.
- □ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- □ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.



Preventative Maintenance

Catch Basins/Inlet Structures

- □ Staff should regularly inspect facilities to ensure compliance with the following:
  - ✓ Immediate repair of any deterioration threatening structural integrity.
  - ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.



Spill Response and Prevention Procedures

- Keep your spill prevention control plan up-to-date.

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended "work-arounds" for drainage system maintenance:

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

  - ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.

  - ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

  - ✓ Do not dump illegal materials anywhere onsite.

  - ✓ Identify illicit connections, illicit discharge, and illegal dumping.

  - ✓ Cleanup spills immediately and properly dispose of wastes.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.

  - ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.

  - ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .

- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

City of Seattle, Seattle Public Utilities Department of Planning and Development, 2009. *Stormwater Manual Vol. 1 Source Control Technical Requirements Manual*.

Knox County Tennessee *Stormwater Management Manual* Chapter 5 Drainage System Maintenance, 2008. Available online at: http://www.knoxcounty.org/stormwater/manual/Volume%201/knoxco_swmm_v1_chap5_jan2008.pdf.

US EPA. Storm Drain System Cleaning, 2012. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=102.

Plaza and Sidewalk Cleaning SC-71



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. This fact sheet describes good housekeeping practices that can be incorporated into the municipality's existing cleaning and maintenance program.

Approach

Pollution Prevention

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).

Suggested Protocols

Surface Cleaning

- Regularly broom (dry) sweep sidewalk, plaza and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Block the storm drain or contain runoff when cleaning with water. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed. (Permission may be required from local sanitation district.)

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- Block the storm drain or contain runoff when washing parking areas, driveways or drive-throughs. Use absorbents to pick up oil; then dry sweep. Clean with or without soap. Collect water and pump to a tank or discharge to sanitary sewer if allowed. Street Repair and Maintenance.

Graffiti Removal

- Avoid graffiti abatement activities during rain events.
- Implement the procedures under Painting and Paint Removal in SC-70 Roads, Streets, and Highway Operation and Maintenance fact sheet when graffiti is removed by painting over.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if authorized to do so if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound). Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

Surface Removal and Repair

- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up as much material as possible.
- Designate an area for clean up and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to landscaping or collected and pumped to the sanitary sewer if allowed.

Concrete Installation and Repair

- Schedule asphalt and concrete activities for dry weather.

- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place san bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- Protect applications of fresh concrete from rainfall and runoff until the material has dried.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Clean parking lots on a regular basis with a street sweeper.

Training

- Provide regular training to field employees and/or contractors regarding surface cleaning and proper operation of equipment.
- Train employee and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include current sweeper technology to remove oil and grease.
- Surface cleaning activities that require discharges to the local sewering agency will require coordination with the agency.
- Arrangements for disposal of the swept material collected must be made, as well as accurate tracking of the areas swept and the frequency of sweeping.

Requirements

Costs

- The largest expenditures for sweeping and cleaning of sidewalks, plazas, and parking lots are in staffing and equipment. Sweeping of these areas should be incorporated into street sweeping programs to reduce costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Community education, such as informing residents about their options for recycling and waste disposal, as well as the consequences of littering, can instill a sense of citizen responsibility and potentially reduce the amount of maintenance required by the municipality.

Additional BMPs that should be considered for parking lot areas include:

- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

References and Resources

Bay Area Stormwater Management Agencies Association (BASMAA). 1996. Pollution From Surface Cleaning Folder http://www.basmaa.org

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Plan. 2001. Municipal Activities Model Program Guidance. November.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

APPENDIX I3

EVANS AND ETHANAC PRELIMINARY DRAINAGE REPORT

PRELIMINARY DRAINAGE ANALYSIS

FOR

APN 331-060-018

MENIFEE INDUSTRIAL 3

CITY OF MENIFEE

RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

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JUNE 30, 2022
REVISES: NOVEMBER 28, 2022
REVISES: OCTOBER 18, 2023

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein.



10/18/2023

Patrick C. Flanagan Jr., P.E. | Date | Seal
Registered Civil Engineer

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APPENDIX F: **REFERENCES**

- NATIONAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY
- NOAA PRECIPITATION FREQUENCY DATA SERVER
- RCFC&WCD HYDROLOGY MANUAL RUNOFF INDEX NUMBERS (PLATE D-5.5)

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EXHIBIT A: **HYDROLOGY MAP – EXISTING CONDITION (RATIONAL)**

EXHIBIT B: **HYDROLOGY MAP – PROPOSED CONDITION (RATIONAL)**

EXHIBIT C: **HYDROLOGY MAP – OFF SITE (RATIONAL)**

I. PURPOSE AND SCOPE

The purpose of this drainage analysis is to quantify the 10-year storm event runoff emanating from the on-site drainage areas for the proposed industrial warehouse development located in the City of Menifee, Riverside County, California. The study will analyze the existing and proposed hydrologic conditions of the Project's drainage areas and determine the necessary drainage improvements to convey Project flows through the property.

The scope of this analysis includes the following:

1. Determination of points of flow concentration and drainage areas.
2. Determination of the on-site 10-year flows based upon the existing and proposed conditions utilizing the Civil Design Software, Rational Tabling program for Riverside County.
3. Preparation of hydrology maps.
4. Preparation of the drainage report.

II. PROJECT DESCRIPTION

The proposed project is located in the City of Menifee, County of Riverside, California. The site is located along the east side of Evans Road between Ethanac Road to the north, and McLaughlin Road, to the south. The project site is made up of one parcel: APN 330-060-018. The site is bounded by Ethanac Road to the north, Evans Road to the west, undeveloped land to the south, and a drainage channel to the east. The existing boundary area is approximately 7.52 acres in size. The parcel is proposed to be developed with an industrial warehouse building with associated parking, hardscape, landscape, and access. The project proposes street dedication to Evans Road and Ethanac Road, which will bring the total net project area to approximately 6.79 acres.

III. DRAINAGE AREA OVERVIEW

Existing Condition

The project site is currently undeveloped and is graded for farmland. Topographically, the site elevations range from approximately 1419.80 feet to 1421.90 feet above Mean Sea Level (MSL). The project site generally drains from the east to the west at an approximate grade of 0.30%. The neighboring parcel to the south of the project contribute tributary flows to the site, and those flows will be analyzed in this study. Historically, flows generated by the site during storm events pond near the northwest corner of the site before reaching a depth where flows can weir over the high point of Evans Road located at the southwest corner of the intersection with Ethanac Road. Flows continue westerly until they reach an existing culvert located near Murrieta Road. Flows enter the culvert and cross

Ethanac Road before entering the existing Line A drainage channel on the north side of Ethanac Road. Coordination with Riverside County Flood Control and Water Conservation District confirms that the subject site was assumed to enter the storm drain channel directly north of the site. Therefore, the channel has capacity for historic flows, and post development flows will be directed to the channel.

Proposed Condition

Upon development, the site will be directed to two areas of the site. Flows generated by the south side of the site (area A2) will be directed via sheet flow, ribbon gutter and curb & gutter to a proposed inlet located on the south side of the proposed truck court. Flows will be directed to a proposed underground detention system located under the truck court sized to mitigate for increased runoff. Flows generated by the north side of the site (area A1) will be directed via sheet flow, ribbon gutter and curb & gutter to a proposed drop inlet located at the northeast corner of the site. Flows will be directed southerly via storm drain where they will confluence with flows generated by the south side of the site at the proposed underground detention system. The proposed basin is sized preliminarily to contain the difference between the existing and proposed 10-year, 24-hour storm event, which exceeds the difference between existing and proposed 2-year storm. Flows from the proposed underground basin will be directed to a proposed sump and pump that will pump flows to a proposed Modular Wetland system located along Evans Road for water quality purposes at a rate optimal for the Modular Wetland system. Treated flows will discharge the system and be directed to a proposed catch basin located in Evans Road. The proposed catch basin will convey flows to the existing channel on the north side of Ethanac Road where flows go historically. In the event the basin reaches capacity, flows will overflow from the proposed drop inlet located at the northeast corner of the site and be directed via storm drain to the proposed catch basin in Evans Road.

Off-Site

The property to the south (APN 330-060-025) drains northwesterly, and approximately 4.03 acres are tributary to the subject site. See Appendix E and Exhibit C for the analysis and hydrology map associated with off site flows. The site will accept and treat off site flows on the easterly side of the site (Area B1). A proposed concrete ditch will intercept off site flows on the westerly side (area B2) and convey them to a proposed under sidewalk drain where flows will enter Evans Road as they do historically. The peak flow rate for the 100-year storm generated from the off-site area tributary to the proposed ditch will be approximately 4.08 CFS. The peak flow rate for the 100-year storm generated from the off-site area accepted by the site will be approximately 2.17 CFS.

IV. HYDROLOGY

The Riverside County Hydrology Manual (RCFC&WCD) was used to develop the hydrologic parameters for the hydrology analysis. In addition, Hydrologic Soil Groups

(HSG) were determined using the Natural Resources Conservation Service Web Soil Survey. The study area consists of soil type "C" and "D" (see Appendix F).

The Rational Method was used to determine the times of concentration under the existing and proposed conditions for use in the Unit Hydrograph Method calculations. The existing condition was analyzed assuming the cover is "1 acre single family" which is consistent with the Romoland Master Drainage Plan. Computations were performed using the RSBC computer program developed by Civil Cadd/Civil Design Engineering Software.

V. RESULTS

For preliminary sizing of the proposed underground detention basin, a unit hydrograph analysis was performed for the 2-year, 24-hour storm and the10-year, 24-hour storm event for both the existing condition and proposed condition. Calculations can be found in Appendix C and Appendix D. Results of the analysis are found below in Table 5-1 and 5-2. The difference in runoff volume for the 10-year existing and proposed condition is 0.98 acre-feet, which is approximately 42,700 cubic feet. The 10-year storm for the proposed condition has a peak flow rate of 2.73 cfs compared to the existing condition of 1.91 cfs. The difference in runoff volume for the 2-year existing and proposed condition is 0.83 acre-feet, which is approximately 36,200 cubic feet. The proposed basin is designed for the 10-year storm.

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_{10} (cfs)	V_{10} (ac-ft)
Existing	6.79	1.91	0.61
Proposed	6.79	2.73	1.59

Table 5-1: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results (10-year storm)

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_2 (cfs)	V_2 (ac-ft)
Existing	6.79	0.18	0.12
Proposed	6.79	0.99	0.95

Table 5-2: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results (HCOC)

VI. STUDY FINDINGS

The proposed basin will help reduce runoff volume during large storms and also mitigate for increased peak flow rate caused by the development. Post-development flows will enter the underground basin via drop inlets and onsite storm drain system. Flows from the basin will be treated by a proposed modular wetlands unit, and treated flows will be discharged

from the modular wetlands to the existing channel on the north side of Ethanac Road as they do historically.

VII. CONCLUSION

The proposed underground basin has been sized to detain the difference in volume between the existing condition and the proposed condition for the 10-year, 24-hour storm event. The basin will help reduce flood volume leaving the site and help mitigate post-development flow rates. Flows captured onsite will be directed to the proposed modular wetlands system for water quality purposes and discharge into the channel north of Ethanac Road. Off site flows will be allowed to continue to their historic flow destinations.

VIII. REFERENCES

1. Riverside County; *Riverside County Flood Control & Water Conservation District Hydrology Manual*, April 1978.
2. National Resources Conservation Service; Web Soil Survey. September 13, 2021.
3. NOAA's National Weather Service; NOAA Atlas 14, Volume 6, Version 2. June 14, 2022

FIGURE 1: REGIONAL VICINITY MAP

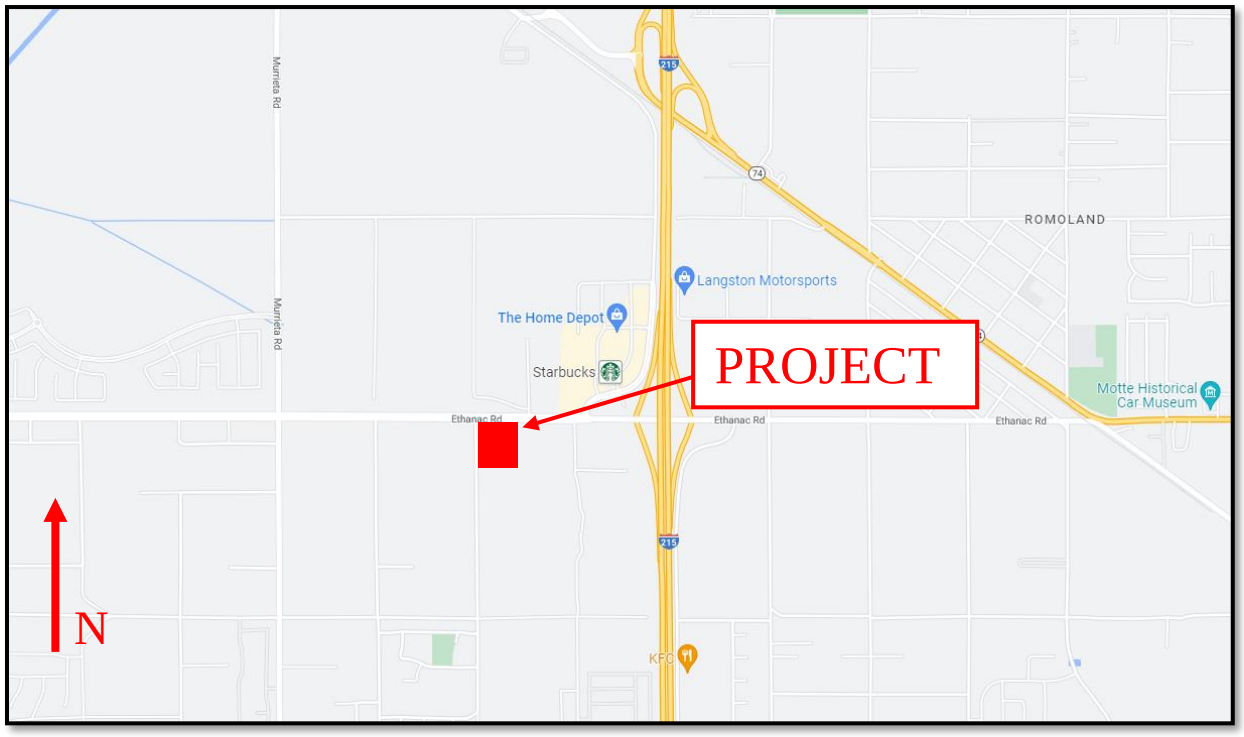


FIGURE 2: LOCAL VICINITY MAP

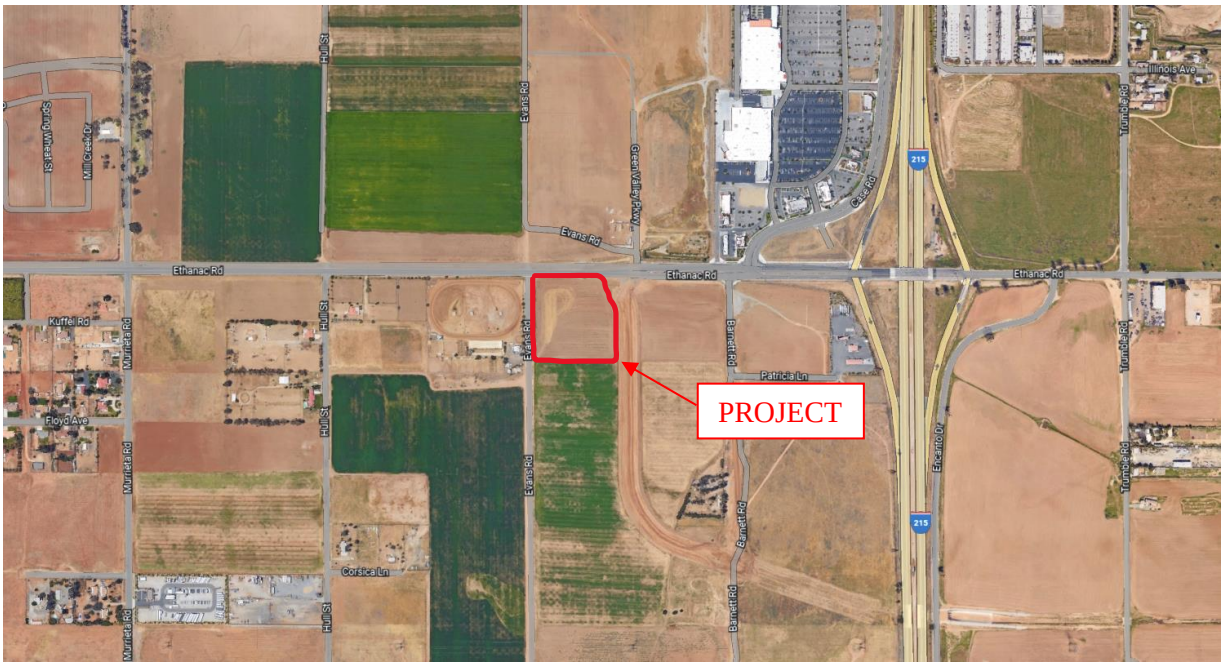
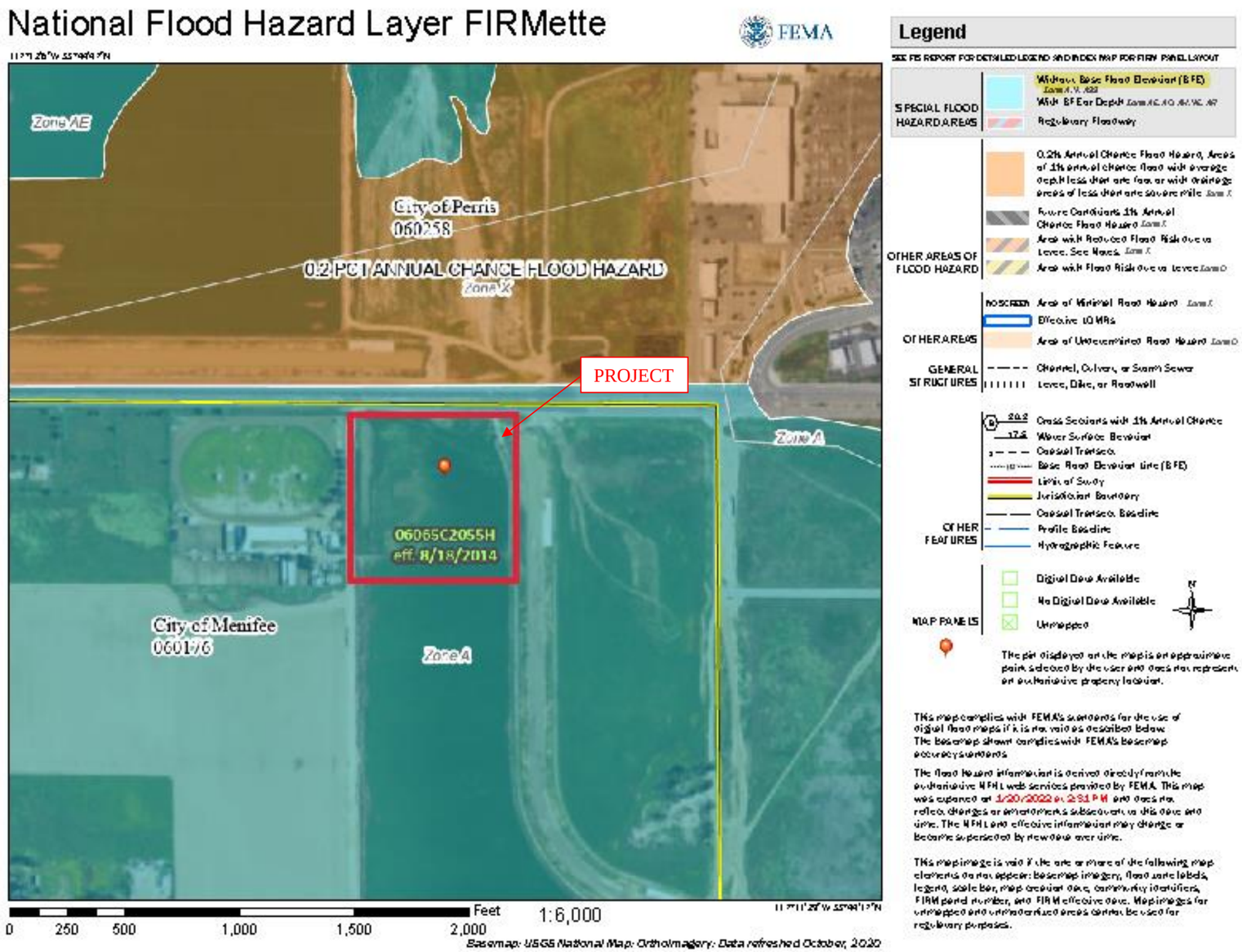


FIGURE 3: FEMA FLOODPLAIN MAP



APPENDIX A

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (RATIONAL METHOD)

APPENDIX A.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 10/18/23 File:10.out

1494-0013 EVANS ROAD (MENIFEE INDUSTRIAL 3)
10 YEAR STORM EVENT
PRE DEVELOPMENT

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

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

Program License Serial Number 6522

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 576.000(Ft.)
Top (of initial area) elevation = 21.300(Ft.)
Bottom (of initial area) elevation = 19.800(Ft.)
Difference in elevation = 1.500(Ft.)
Slope = 0.00260 s(percent)= 0.26
TC = k(0.480)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 20.057 min.

Rainfall intensity = 1.334(In/Hr) for a 10.0 year storm
SINGLE FAMILY (1 Acre Lot)
Runoff Coefficient = 0.686
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.800
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2) = 70.20
Pervious area fraction = 0.800; Impervious fraction = 0.200
Initial subarea runoff = 6.211(CFS)
Total initial stream area = 6.790(Ac.)
Pervious area fraction = 0.800
End of computations, total study area = 6.79 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 0.800
Area averaged RI index number = 70.2

APPENDIX B

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (RATIONAL METHOD)

APPENDIX B.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 10/18/23 File:10.out

1494-0013 EVANS ROAD (MENIFEE INDUSTRIAL 3)
10 YEAR STORM EVENT
POST DEVELOPMENT

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

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

Program License Serial Number 6522

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
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10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 532.000(Ft.)
Top (of initial area) elevation = 20.800(Ft.)
Bottom (of initial area) elevation = 17.300(Ft.)
Difference in elevation = 3.500(Ft.)
Slope = 0.00658 s(percent)= 0.66
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.089 min.

```
Rainfall intensity =      1.869(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 = 0.800
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  70.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.585(CFS)
Total initial stream area =        3.400(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 =    13.300(Ft.)
Downstream point/station elevation =     8.300(Ft.)
Pipe length  =   450.00(Ft.)   Manning's N = 0.013
No. of pipes = 1  Required pipe flow  =     5.585(CFS)
Nearest computed pipe diameter  =     15.00(In.)
Calculated individual pipe flow  =     5.585(CFS)
Normal flow depth in pipe =   10.34(In.)
Flow top width inside pipe =   13.89(In.)
Critical Depth =   11.50(In.)
Pipe flow velocity =      6.19(Ft/s)
Travel time through pipe =    1.21 min.
Time of concentration (TC) =    11.30 min.


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      102.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 1
Stream flow area =      3.400(Ac.)
Runoff from this stream =      5.585(CFS)
Time of concentration =   11.30 min.
Rainfall intensity =     1.768(In/Hr)
Program is now starting with Main Stream No. 2


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      103.000 to Point/Station      102.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   535.000(Ft.)
Top (of initial area) elevation =    21.900(Ft.)
Bottom (of initial area) elevation =    16.600(Ft.)
Difference in elevation =     5.300(Ft.)
Slope =    0.00991  s(percent)=       0.99
```

```
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =    9.317 min.
Rainfall intensity =      1.943(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 = 0.800
Decimal fraction soil group D = 0.200
RI index for soil(AMC 2)  =  70.20
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      5.794(CFS)
Total initial stream area =        3.390(Ac.)
Pervious area fraction = 0.100


++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++++
Process from Point/Station      102.000 to Point/Station      102.000
**** CONFLUENCE OF MAIN STREAMS ****
________________________________________________________________________
The following data inside Main Stream is listed:
In Main Stream number: 2
Stream flow area =      3.390(Ac.)
Runoff from this stream =      5.794(CFS)
Time of concentration =    9.32 min.
Rainfall intensity =     1.943(In/Hr)
Summary of stream data:

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


1        5.585     11.30             1.768
2        5.794      9.32             1.943
Largest stream flow has longer or shorter time of concentration
Qp =      5.794 + sum of
        Qa          Tb/Ta
         5.585 *    0.824 =      4.605
Qp =     10.398

Total of 2 main streams to confluence:
Flow rates before confluence point:
       5.585       5.794
Area of streams before confluence:
        3.400        3.390


Results of confluence:
Total flow rate =     10.398(CFS)
Time of concentration =     9.317 min.
Effective stream area after confluence  =      6.790(Ac.)
End of computations, total study area =            6.79 (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

APPENDIX C

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (UNIT HYDROGRAPH)

APPENDIX C.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

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 10/18/23 File: 102410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0013 EVANS ROAD (MENIFEE INDUSTRIAL 3)
10-YEAR, 24-HOUR STORM EVENT
PRE DEVELOPMENT
2023.10.18

Drainage Area = 6.79(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 6.79(Ac.) = 0.011 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.201 Hr.
Lag time = 12.04 Min.
25% of lag time = 3.01 Min.
40% of lag time = 4.81 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]
6.79	2.05	13.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
6.79	5.32	36.12

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.050(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.395(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 3.395(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
6.790	81.00	0.200

Total Area Entered = 6.79(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
81.0	81.0	0.233	0.200	0.191	1.000	0.191
					Sum (F) =	0.191

Area averaged mean soil loss (F) (In/Hr) = 0.191
Minimum soil loss rate ((In/Hr)) = 0.095
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	41.542	4.612	0.316
2	0.167	83.084	19.113	1.308
3	0.250	124.626	27.509	1.882
4	0.333	166.168	16.681	1.141
5	0.417	207.710	8.111	0.555
6	0.500	249.252	5.250	0.359
7	0.583	290.794	3.938	0.269
8	0.667	332.336	2.968	0.203
9	0.750	373.878	2.395	0.164
10	0.833	415.420	1.854	0.127
11	0.917	456.962	1.427	0.098
12	1.000	498.504	1.275	0.087
13	1.083	540.047	1.092	0.075
14	1.167	581.589	0.866	0.059
15	1.250	623.131	0.727	0.050
16	1.333	664.673	0.588	0.040
17	1.417	706.215	0.450	0.031
18	1.500	747.757	0.415	0.028
19	1.583	789.299	0.415	0.028
20	1.667	830.841	0.315	0.022
			Sum = 100.000	Sum= 6.843

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.338)	0.024	0.003
2	0.17	0.07	0.027	(0.337)	0.024	0.003
3	0.25	0.07	0.027	(0.336)	0.024	0.003
4	0.33	0.10	0.041	(0.334)	0.037	0.004
5	0.42	0.10	0.041	(0.333)	0.037	0.004

6	0.50	0.10	0.041	(0.332)	0.037	0.004
7	0.58	0.10	0.041	(0.330)	0.037	0.004
8	0.67	0.10	0.041	(0.329)	0.037	0.004
9	0.75	0.10	0.041	(0.328)	0.037	0.004
10	0.83	0.13	0.054	(0.326)	0.049	0.005
11	0.92	0.13	0.054	(0.325)	0.049	0.005
12	1.00	0.13	0.054	(0.324)	0.049	0.005
13	1.08	0.10	0.041	(0.323)	0.037	0.004
14	1.17	0.10	0.041	(0.321)	0.037	0.004
15	1.25	0.10	0.041	(0.320)	0.037	0.004
16	1.33	0.10	0.041	(0.319)	0.037	0.004
17	1.42	0.10	0.041	(0.317)	0.037	0.004
18	1.50	0.10	0.041	(0.316)	0.037	0.004
19	1.58	0.10	0.041	(0.315)	0.037	0.004
20	1.67	0.10	0.041	(0.314)	0.037	0.004
21	1.75	0.10	0.041	(0.312)	0.037	0.004
22	1.83	0.13	0.054	(0.311)	0.049	0.005
23	1.92	0.13	0.054	(0.310)	0.049	0.005
24	2.00	0.13	0.054	(0.309)	0.049	0.005
25	2.08	0.13	0.054	(0.307)	0.049	0.005
26	2.17	0.13	0.054	(0.306)	0.049	0.005
27	2.25	0.13	0.054	(0.305)	0.049	0.005
28	2.33	0.13	0.054	(0.304)	0.049	0.005
29	2.42	0.13	0.054	(0.302)	0.049	0.005
30	2.50	0.13	0.054	(0.301)	0.049	0.005
31	2.58	0.17	0.068	(0.300)	0.061	0.007
32	2.67	0.17	0.068	(0.299)	0.061	0.007
33	2.75	0.17	0.068	(0.298)	0.061	0.007
34	2.83	0.17	0.068	(0.296)	0.061	0.007
35	2.92	0.17	0.068	(0.295)	0.061	0.007
36	3.00	0.17	0.068	(0.294)	0.061	0.007
37	3.08	0.17	0.068	(0.293)	0.061	0.007
38	3.17	0.17	0.068	(0.291)	0.061	0.007
39	3.25	0.17	0.068	(0.290)	0.061	0.007
40	3.33	0.17	0.068	(0.289)	0.061	0.007
41	3.42	0.17	0.068	(0.288)	0.061	0.007
42	3.50	0.17	0.068	(0.287)	0.061	0.007
43	3.58	0.17	0.068	(0.285)	0.061	0.007
44	3.67	0.17	0.068	(0.284)	0.061	0.007
45	3.75	0.17	0.068	(0.283)	0.061	0.007
46	3.83	0.20	0.081	(0.282)	0.073	0.008
47	3.92	0.20	0.081	(0.281)	0.073	0.008
48	4.00	0.20	0.081	(0.279)	0.073	0.008
49	4.08	0.20	0.081	(0.278)	0.073	0.008
50	4.17	0.20	0.081	(0.277)	0.073	0.008
51	4.25	0.20	0.081	(0.276)	0.073	0.008
52	4.33	0.23	0.095	(0.275)	0.086	0.010
53	4.42	0.23	0.095	(0.274)	0.086	0.010
54	4.50	0.23	0.095	(0.272)	0.086	0.010
55	4.58	0.23	0.095	(0.271)	0.086	0.010
56	4.67	0.23	0.095	(0.270)	0.086	0.010
57	4.75	0.23	0.095	(0.269)	0.086	0.010
58	4.83	0.27	0.109	(0.268)	0.098	0.011
59	4.92	0.27	0.109	(0.267)	0.098	0.011
60	5.00	0.27	0.109	(0.265)	0.098	0.011
61	5.08	0.20	0.081	(0.264)	0.073	0.008
62	5.17	0.20	0.081	(0.263)	0.073	0.008
63	5.25	0.20	0.081	(0.262)	0.073	0.008
64	5.33	0.23	0.095	(0.261)	0.086	0.010
65	5.42	0.23	0.095	(0.260)	0.086	0.010

66	5.50	0.23	0.095	(0.259)	0.086	0.010
67	5.58	0.27	0.109	(0.257)	0.098	0.011
68	5.67	0.27	0.109	(0.256)	0.098	0.011
69	5.75	0.27	0.109	(0.255)	0.098	0.011
70	5.83	0.27	0.109	(0.254)	0.098	0.011
71	5.92	0.27	0.109	(0.253)	0.098	0.011
72	6.00	0.27	0.109	(0.252)	0.098	0.011
73	6.08	0.30	0.122	(0.251)	0.110	0.012
74	6.17	0.30	0.122	(0.250)	0.110	0.012
75	6.25	0.30	0.122	(0.248)	0.110	0.012
76	6.33	0.30	0.122	(0.247)	0.110	0.012
77	6.42	0.30	0.122	(0.246)	0.110	0.012
78	6.50	0.30	0.122	(0.245)	0.110	0.012
79	6.58	0.33	0.136	(0.244)	0.122	0.014
80	6.67	0.33	0.136	(0.243)	0.122	0.014
81	6.75	0.33	0.136	(0.242)	0.122	0.014
82	6.83	0.33	0.136	(0.241)	0.122	0.014
83	6.92	0.33	0.136	(0.240)	0.122	0.014
84	7.00	0.33	0.136	(0.239)	0.122	0.014
85	7.08	0.33	0.136	(0.237)	0.122	0.014
86	7.17	0.33	0.136	(0.236)	0.122	0.014
87	7.25	0.33	0.136	(0.235)	0.122	0.014
88	7.33	0.37	0.149	(0.234)	0.134	0.015
89	7.42	0.37	0.149	(0.233)	0.134	0.015
90	7.50	0.37	0.149	(0.232)	0.134	0.015
91	7.58	0.40	0.163	(0.231)	0.147	0.016
92	7.67	0.40	0.163	(0.230)	0.147	0.016
93	7.75	0.40	0.163	(0.229)	0.147	0.016
94	7.83	0.43	0.177	(0.228)	0.159	0.018
95	7.92	0.43	0.177	(0.227)	0.159	0.018
96	8.00	0.43	0.177	(0.226)	0.159	0.018
97	8.08	0.50	0.204	(0.225)	0.183	0.020
98	8.17	0.50	0.204	(0.224)	0.183	0.020
99	8.25	0.50	0.204	(0.223)	0.183	0.020
100	8.33	0.50	0.204	(0.222)	0.183	0.020
101	8.42	0.50	0.204	(0.221)	0.183	0.020
102	8.50	0.50	0.204	(0.219)	0.183	0.020
103	8.58	0.53	0.217	(0.218)	0.196	0.022
104	8.67	0.53	0.217	(0.217)	0.196	0.022
105	8.75	0.53	0.217	(0.216)	0.196	0.022
106	8.83	0.57	0.231	(0.215)	0.208	0.023
107	8.92	0.57	0.231	(0.214)	0.208	0.023
108	9.00	0.57	0.231	(0.213)	0.208	0.023
109	9.08	0.63	0.258	0.212	(0.232)	0.046
110	9.17	0.63	0.258	0.211	(0.232)	0.047
111	9.25	0.63	0.258	0.210	(0.232)	0.048
112	9.33	0.67	0.272	0.209	(0.244)	0.062
113	9.42	0.67	0.272	0.208	(0.244)	0.063
114	9.50	0.67	0.272	0.207	(0.244)	0.064
115	9.58	0.70	0.285	0.206	(0.257)	0.079
116	9.67	0.70	0.285	0.205	(0.257)	0.080
117	9.75	0.70	0.285	0.204	(0.257)	0.081
118	9.83	0.73	0.299	0.203	(0.269)	0.095
119	9.92	0.73	0.299	0.202	(0.269)	0.096
120	10.00	0.73	0.299	0.201	(0.269)	0.097
121	10.08	0.50	0.204	(0.200)	0.183	0.020
122	10.17	0.50	0.204	(0.199)	0.183	0.020
123	10.25	0.50	0.204	(0.199)	0.183	0.020
124	10.33	0.50	0.204	(0.198)	0.183	0.020
125	10.42	0.50	0.204	(0.197)	0.183	0.020

126	10.50	0.50	0.204	(	0.196)		0.183	0.020
127	10.58	0.67	0.272		0.195	(	0.244)	0.077
128	10.67	0.67	0.272		0.194	(	0.244)	0.078
129	10.75	0.67	0.272		0.193	(	0.244)	0.079
130	10.83	0.67	0.272		0.192	(	0.244)	0.080
131	10.92	0.67	0.272		0.191	(	0.244)	0.081
132	11.00	0.67	0.272		0.190	(	0.244)	0.082
133	11.08	0.63	0.258		0.189	(	0.232)	0.069
134	11.17	0.63	0.258		0.188	(	0.232)	0.070
135	11.25	0.63	0.258		0.187	(	0.232)	0.071
136	11.33	0.63	0.258		0.186	(	0.232)	0.072
137	11.42	0.63	0.258		0.185	(	0.232)	0.073
138	11.50	0.63	0.258		0.184	(	0.232)	0.074
139	11.58	0.57	0.231		0.183	(	0.208)	0.047
140	11.67	0.57	0.231		0.183	(	0.208)	0.048
141	11.75	0.57	0.231		0.182	(	0.208)	0.049
142	11.83	0.60	0.244		0.181	(	0.220)	0.064
143	11.92	0.60	0.244		0.180	(	0.220)	0.065
144	12.00	0.60	0.244		0.179	(	0.220)	0.066
145	12.08	0.83	0.340		0.178	(	0.306)	0.161
146	12.17	0.83	0.340		0.177	(	0.306)	0.162
147	12.25	0.83	0.340		0.176	(	0.306)	0.163
148	12.33	0.87	0.353		0.175	(	0.318)	0.178
149	12.42	0.87	0.353		0.174	(	0.318)	0.179
150	12.50	0.87	0.353		0.174	(	0.318)	0.179
151	12.58	0.93	0.380		0.173	(	0.342)	0.208
152	12.67	0.93	0.380		0.172	(	0.342)	0.208
153	12.75	0.93	0.380		0.171	(	0.342)	0.209
154	12.83	0.97	0.394		0.170	(	0.354)	0.224
155	12.92	0.97	0.394		0.169	(	0.354)	0.225
156	13.00	0.97	0.394		0.168	(	0.354)	0.225
157	13.08	1.13	0.462		0.168	(	0.416)	0.294
158	13.17	1.13	0.462		0.167	(	0.416)	0.295
159	13.25	1.13	0.462		0.166	(	0.416)	0.296
160	13.33	1.13	0.462		0.165	(	0.416)	0.297
161	13.42	1.13	0.462		0.164	(	0.416)	0.298
162	13.50	1.13	0.462		0.163	(	0.416)	0.298
163	13.58	0.77	0.312		0.163	(	0.281)	0.150
164	13.67	0.77	0.312		0.162	(	0.281)	0.151
165	13.75	0.77	0.312		0.161	(	0.281)	0.151
166	13.83	0.77	0.312		0.160	(	0.281)	0.152
167	13.92	0.77	0.312		0.159	(	0.281)	0.153
168	14.00	0.77	0.312		0.158	(	0.281)	0.154
169	14.08	0.90	0.367		0.158	(	0.330)	0.209
170	14.17	0.90	0.367		0.157	(	0.330)	0.210
171	14.25	0.90	0.367		0.156	(	0.330)	0.211
172	14.33	0.87	0.353		0.155	(	0.318)	0.198
173	14.42	0.87	0.353		0.154	(	0.318)	0.199
174	14.50	0.87	0.353		0.154	(	0.318)	0.199
175	14.58	0.87	0.353		0.153	(	0.318)	0.200
176	14.67	0.87	0.353		0.152	(	0.318)	0.201
177	14.75	0.87	0.353		0.151	(	0.318)	0.202
178	14.83	0.83	0.340		0.151	(	0.306)	0.189
179	14.92	0.83	0.340		0.150	(	0.306)	0.190
180	15.00	0.83	0.340		0.149	(	0.306)	0.191
181	15.08	0.80	0.326		0.148	(	0.293)	0.178
182	15.17	0.80	0.326		0.147	(	0.293)	0.179
183	15.25	0.80	0.326		0.147	(	0.293)	0.179
184	15.33	0.77	0.312		0.146	(	0.281)	0.166
185	15.42	0.77	0.312		0.145	(	0.281)	0.167

186	15.50	0.77	0.312	0.144	(0.281)	0.168
187	15.58	0.63	0.258	0.144	(0.232)	0.114
188	15.67	0.63	0.258	0.143	(0.232)	0.115
189	15.75	0.63	0.258	0.142	(0.232)	0.116
190	15.83	0.63	0.258	0.142	(0.232)	0.117
191	15.92	0.63	0.258	0.141	(0.232)	0.117
192	16.00	0.63	0.258	0.140	(0.232)	0.118
193	16.08	0.13	0.054	(0.139)	0.049	0.005
194	16.17	0.13	0.054	(0.139)	0.049	0.005
195	16.25	0.13	0.054	(0.138)	0.049	0.005
196	16.33	0.13	0.054	(0.137)	0.049	0.005
197	16.42	0.13	0.054	(0.137)	0.049	0.005
198	16.50	0.13	0.054	(0.136)	0.049	0.005
199	16.58	0.10	0.041	(0.135)	0.037	0.004
200	16.67	0.10	0.041	(0.134)	0.037	0.004
201	16.75	0.10	0.041	(0.134)	0.037	0.004
202	16.83	0.10	0.041	(0.133)	0.037	0.004
203	16.92	0.10	0.041	(0.132)	0.037	0.004
204	17.00	0.10	0.041	(0.132)	0.037	0.004
205	17.08	0.17	0.068	(0.131)	0.061	0.007
206	17.17	0.17	0.068	(0.130)	0.061	0.007
207	17.25	0.17	0.068	(0.130)	0.061	0.007
208	17.33	0.17	0.068	(0.129)	0.061	0.007
209	17.42	0.17	0.068	(0.128)	0.061	0.007
210	17.50	0.17	0.068	(0.128)	0.061	0.007
211	17.58	0.17	0.068	(0.127)	0.061	0.007
212	17.67	0.17	0.068	(0.127)	0.061	0.007
213	17.75	0.17	0.068	(0.126)	0.061	0.007
214	17.83	0.13	0.054	(0.125)	0.049	0.005
215	17.92	0.13	0.054	(0.125)	0.049	0.005
216	18.00	0.13	0.054	(0.124)	0.049	0.005
217	18.08	0.13	0.054	(0.123)	0.049	0.005
218	18.17	0.13	0.054	(0.123)	0.049	0.005
219	18.25	0.13	0.054	(0.122)	0.049	0.005
220	18.33	0.13	0.054	(0.122)	0.049	0.005
221	18.42	0.13	0.054	(0.121)	0.049	0.005
222	18.50	0.13	0.054	(0.120)	0.049	0.005
223	18.58	0.10	0.041	(0.120)	0.037	0.004
224	18.67	0.10	0.041	(0.119)	0.037	0.004
225	18.75	0.10	0.041	(0.119)	0.037	0.004
226	18.83	0.07	0.027	(0.118)	0.024	0.003
227	18.92	0.07	0.027	(0.118)	0.024	0.003
228	19.00	0.07	0.027	(0.117)	0.024	0.003
229	19.08	0.10	0.041	(0.116)	0.037	0.004
230	19.17	0.10	0.041	(0.116)	0.037	0.004
231	19.25	0.10	0.041	(0.115)	0.037	0.004
232	19.33	0.13	0.054	(0.115)	0.049	0.005
233	19.42	0.13	0.054	(0.114)	0.049	0.005
234	19.50	0.13	0.054	(0.114)	0.049	0.005
235	19.58	0.10	0.041	(0.113)	0.037	0.004
236	19.67	0.10	0.041	(0.113)	0.037	0.004
237	19.75	0.10	0.041	(0.112)	0.037	0.004
238	19.83	0.07	0.027	(0.112)	0.024	0.003
239	19.92	0.07	0.027	(0.111)	0.024	0.003
240	20.00	0.07	0.027	(0.111)	0.024	0.003
241	20.08	0.10	0.041	(0.110)	0.037	0.004
242	20.17	0.10	0.041	(0.110)	0.037	0.004
243	20.25	0.10	0.041	(0.109)	0.037	0.004
244	20.33	0.10	0.041	(0.109)	0.037	0.004
245	20.42	0.10	0.041	(0.108)	0.037	0.004

246	20.50	0.10	0.041	(0.108)	0.037	0.004
247	20.58	0.10	0.041	(0.107)	0.037	0.004
248	20.67	0.10	0.041	(0.107)	0.037	0.004
249	20.75	0.10	0.041	(0.107)	0.037	0.004
250	20.83	0.07	0.027	(0.106)	0.024	0.003
251	20.92	0.07	0.027	(0.106)	0.024	0.003
252	21.00	0.07	0.027	(0.105)	0.024	0.003
253	21.08	0.10	0.041	(0.105)	0.037	0.004
254	21.17	0.10	0.041	(0.104)	0.037	0.004
255	21.25	0.10	0.041	(0.104)	0.037	0.004
256	21.33	0.07	0.027	(0.104)	0.024	0.003
257	21.42	0.07	0.027	(0.103)	0.024	0.003
258	21.50	0.07	0.027	(0.103)	0.024	0.003
259	21.58	0.10	0.041	(0.102)	0.037	0.004
260	21.67	0.10	0.041	(0.102)	0.037	0.004
261	21.75	0.10	0.041	(0.102)	0.037	0.004
262	21.83	0.07	0.027	(0.101)	0.024	0.003
263	21.92	0.07	0.027	(0.101)	0.024	0.003
264	22.00	0.07	0.027	(0.101)	0.024	0.003
265	22.08	0.10	0.041	(0.100)	0.037	0.004
266	22.17	0.10	0.041	(0.100)	0.037	0.004
267	22.25	0.10	0.041	(0.100)	0.037	0.004
268	22.33	0.07	0.027	(0.099)	0.024	0.003
269	22.42	0.07	0.027	(0.099)	0.024	0.003
270	22.50	0.07	0.027	(0.099)	0.024	0.003
271	22.58	0.07	0.027	(0.099)	0.024	0.003
272	22.67	0.07	0.027	(0.098)	0.024	0.003
273	22.75	0.07	0.027	(0.098)	0.024	0.003
274	22.83	0.07	0.027	(0.098)	0.024	0.003
275	22.92	0.07	0.027	(0.097)	0.024	0.003
276	23.00	0.07	0.027	(0.097)	0.024	0.003
277	23.08	0.07	0.027	(0.097)	0.024	0.003
278	23.17	0.07	0.027	(0.097)	0.024	0.003
279	23.25	0.07	0.027	(0.097)	0.024	0.003
280	23.33	0.07	0.027	(0.096)	0.024	0.003
281	23.42	0.07	0.027	(0.096)	0.024	0.003
282	23.50	0.07	0.027	(0.096)	0.024	0.003
283	23.58	0.07	0.027	(0.096)	0.024	0.003
284	23.67	0.07	0.027	(0.096)	0.024	0.003
285	23.75	0.07	0.027	(0.096)	0.024	0.003
286	23.83	0.07	0.027	(0.096)	0.024	0.003
287	23.92	0.07	0.027	(0.095)	0.024	0.003
288	24.00	0.07	0.027	(0.095)	0.024	0.003
	(Loss Rate Not Used)					
Sum =	100.0				Sum =	12.8

Flood volume = Effective rainfall 1.07(In)
times area 6.8(Ac.)/[(In)/(Ft.)] = 0.6(Ac.Ft)
Total soil loss = 2.32(In)
Total soil loss = 1.315(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 26393.5 Cubic Feet
Total soil loss = 57291.8 Cubic Feet

Peak flow rate of this hydrograph = 1.910(CFS)

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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))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0001	0.01	Q				
0+20	0.0002	0.01	Q				
0+25	0.0003	0.02	Q				
0+30	0.0004	0.02	Q				
0+35	0.0006	0.02	Q				
0+40	0.0008	0.02	Q				
0+45	0.0009	0.02	Q				
0+50	0.0011	0.03	Q				
0+55	0.0013	0.03	Q				
1+ 0	0.0015	0.03	Q				
1+ 5	0.0017	0.03	Q				
1+10	0.0019	0.03	Q				
1+15	0.0022	0.03	Q				
1+20	0.0023	0.03	Q				
1+25	0.0025	0.03	Q				
1+30	0.0027	0.03	Q				
1+35	0.0029	0.03	Q				
1+40	0.0031	0.03	Q				
1+45	0.0033	0.03	Q				
1+50	0.0035	0.03	Q				
1+55	0.0037	0.03	Q				
2+ 0	0.0040	0.03	Q				
2+ 5	0.0042	0.03	Q				
2+10	0.0044	0.04	Q				
2+15	0.0047	0.04	Q				
2+20	0.0049	0.04	Q				
2+25	0.0052	0.04	Q				
2+30	0.0054	0.04	Q				
2+35	0.0057	0.04	Q				
2+40	0.0060	0.04	Q				
2+45	0.0062	0.04	Q				
2+50	0.0065	0.04	Q				
2+55	0.0068	0.04	Q				
3+ 0	0.0071	0.04	Q				
3+ 5	0.0075	0.04	Q				
3+10	0.0078	0.05	Q				
3+15	0.0081	0.05	Q				
3+20	0.0084	0.05	Q				
3+25	0.0087	0.05	Q				
3+30	0.0090	0.05	Q				
3+35	0.0093	0.05	Q				
3+40	0.0097	0.05	Q				
3+45	0.0100	0.05	Q				
3+50	0.0103	0.05	Q				
3+55	0.0106	0.05	Q				
4+ 0	0.0110	0.05	Q				
4+ 5	0.0114	0.05	Q				
4+10	0.0117	0.05	Q				
4+15	0.0121	0.05	Q				
4+20	0.0125	0.05	Q				
4+25	0.0129	0.06	Q				
4+30	0.0133	0.06	Q				
4+35	0.0137	0.06	Q				
4+40	0.0141	0.06	Q				

4+45	0.0146	0.06	Q	|	|	|	|
4+50	0.0150	0.06	Q	|	|	|	|
4+55	0.0155	0.07	QV	|	|	|	|
5+ 0	0.0159	0.07	QV	|	|	|	|
5+ 5	0.0164	0.07	QV	|	|	|	|
5+10	0.0169	0.07	QV	|	|	|	|
5+15	0.0173	0.06	QV	|	|	|	|
5+20	0.0177	0.06	QV	|	|	|	|
5+25	0.0181	0.06	QV	|	|	|	|
5+30	0.0186	0.06	QV	|	|	|	|
5+35	0.0190	0.06	QV	|	|	|	|
5+40	0.0195	0.07	QV	|	|	|	|
5+45	0.0200	0.07	QV	|	|	|	|
5+50	0.0204	0.07	QV	|	|	|	|
5+55	0.0209	0.07	QV	|	|	|	|
6+ 0	0.0214	0.07	QV	|	|	|	|
6+ 5	0.0219	0.07	QV	|	|	|	|
6+10	0.0225	0.08	QV	|	|	|	|
6+15	0.0230	0.08	QV	|	|	|	|
6+20	0.0236	0.08	QV	|	|	|	|
6+25	0.0241	0.08	QV	|	|	|	|
6+30	0.0247	0.08	QV	|	|	|	|
6+35	0.0252	0.08	QV	|	|	|	|
6+40	0.0258	0.08	QV	|	|	|	|
6+45	0.0264	0.09	QV	|	|	|	|
6+50	0.0270	0.09	QV	|	|	|	|
6+55	0.0277	0.09	QV	|	|	|	|
7+ 0	0.0283	0.09	QV	|	|	|	|
7+ 5	0.0289	0.09	QV	|	|	|	|
7+10	0.0295	0.09	QV	|	|	|	|
7+15	0.0302	0.09	QV	|	|	|	|
7+20	0.0308	0.09	Q V	|	|	|	|
7+25	0.0315	0.09	Q V	|	|	|	|
7+30	0.0321	0.10	Q V	|	|	|	|
7+35	0.0328	0.10	Q V	|	|	|	|
7+40	0.0335	0.10	Q V	|	|	|	|
7+45	0.0342	0.11	Q V	|	|	|	|
7+50	0.0350	0.11	Q V	|	|	|	|
7+55	0.0357	0.11	Q V	|	|	|	|
8+ 0	0.0365	0.11	Q V	|	|	|	|
8+ 5	0.0373	0.12	Q V	|	|	|	|
8+10	0.0382	0.12	Q V	|	|	|	|
8+15	0.0390	0.13	Q V	|	|	|	|
8+20	0.0399	0.13	Q V	|	|	|	|
8+25	0.0409	0.13	Q V	|	|	|	|
8+30	0.0418	0.13	Q V	|	|	|	|
8+35	0.0427	0.14	Q V	|	|	|	|
8+40	0.0437	0.14	Q V	|	|	|	|
8+45	0.0446	0.14	Q V	|	|	|	|
8+50	0.0456	0.14	Q V	|	|	|	|
8+55	0.0467	0.15	Q V	|	|	|	|
9+ 0	0.0477	0.15	Q V	|	|	|	|
9+ 5	0.0488	0.16	Q V	|	|	|	|
9+10	0.0501	0.19	Q V	|	|	|	|
9+15	0.0517	0.24	Q V	|	|	|	|
9+20	0.0536	0.27	|Q V	|	|	|	|
9+25	0.0557	0.31	|Q V	|	|	|	|
9+30	0.0581	0.35	|Q V	|	|	|	|
9+35	0.0607	0.38	|Q V	|	|	|	|
9+40	0.0635	0.41	|Q V	|	|	|	|

9+45	0.0667	0.45	Q V				
9+50	0.0700	0.49	Q V				
9+55	0.0736	0.52	Q V				
10+ 0	0.0775	0.56	Q V				
10+ 5	0.0814	0.57	Q V				
10+10	0.0848	0.49	Q V				
10+15	0.0872	0.35	Q V				
10+20	0.0891	0.27	Q V				
10+25	0.0907	0.24	Q V				
10+30	0.0922	0.22	Q V				
10+35	0.0937	0.22	Q V				
10+40	0.0957	0.28	Q V				
10+45	0.0983	0.38	Q V				
10+50	0.1013	0.44	Q V				
10+55	0.1046	0.47	Q V				
11+ 0	0.1080	0.49	Q V				
11+ 5	0.1114	0.50	Q V				
11+10	0.1148	0.50	Q V				
11+15	0.1182	0.48	Q V				
11+20	0.1215	0.48	Q V				
11+25	0.1248	0.48	Q V				
11+30	0.1281	0.48	Q V				
11+35	0.1314	0.48	Q V				
11+40	0.1345	0.45	Q V				
11+45	0.1373	0.41	Q V				
11+50	0.1400	0.39	Q V				
11+55	0.1427	0.39	Q V				
12+ 0	0.1456	0.42	Q V				
12+ 5	0.1488	0.46	Q V				
12+10	0.1529	0.60	Q V				
12+15	0.1582	0.78	Q V				
12+20	0.1644	0.90	Q V				
12+25	0.1711	0.98	Q V				
12+30	0.1783	1.04	Q V				
12+35	0.1859	1.10	Q V				
12+40	0.1939	1.16	Q V				
12+45	0.2024	1.24	Q V				
12+50	0.2114	1.30	Q V				
12+55	0.2207	1.35	Q V				
13+ 0	0.2303	1.40	Q V				
13+ 5	0.2403	1.46	Q V				
13+10	0.2512	1.57	Q V				
13+15	0.2631	1.72	Q V				
13+20	0.2756	1.82	Q V				
13+25	0.2885	1.87	Q V				
13+30	0.3016	1.91	Q V				
13+35	0.3147	1.89	Q V				
13+40	0.3266	1.72	Q V				
13+45	0.3366	1.46	Q V				
13+50	0.3456	1.31	Q V				
13+55	0.3542	1.24	Q V				
14+ 0	0.3624	1.20	Q V				
14+ 5	0.3706	1.19	Q V				
14+10	0.3791	1.24	Q V				
14+15	0.3883	1.33	Q V				
14+20	0.3977	1.37	Q V				
14+25	0.4072	1.38	Q V				
14+30	0.4167	1.37	Q V				
14+35	0.4261	1.36	Q V				
14+40	0.4354	1.36	Q V				

14+45	0.4449	1.37	| Q |	|	|	V|	|
14+50	0.4543	1.37	| Q |	|	|	V|	|
14+55	0.4636	1.35	| Q |	|	|	V	|
15+ 0	0.4727	1.33	| Q |	|	|	|V	|
15+ 5	0.4818	1.31	| Q |	|	|	|V	|
15+10	0.4907	1.29	| Q |	|	|	| V	|
15+15	0.4994	1.27	| Q |	|	|	| V	|
15+20	0.5080	1.25	| Q |	|	|	| V	|
15+25	0.5165	1.23	| Q |	|	|	| V	|
15+30	0.5247	1.20	| Q |	|	|	| V	|
15+35	0.5328	1.17	| Q |	|	|	| V	|
15+40	0.5403	1.09	| Q |	|	|	| V	|
15+45	0.5471	0.99	| Q |	|	|	| V	|
15+50	0.5535	0.92	| Q |	|	|	| V	|
15+55	0.5596	0.89	| Q |	|	|	| V	|
16+ 0	0.5656	0.87	| Q |	|	|	| V	|
16+ 5	0.5713	0.83	| Q |	|	|	| V	|
16+10	0.5759	0.67	| Q |	|	|	| V |
16+15	0.5790	0.45	|Q |	|	|	| V |
16+20	0.5812	0.31	|Q |	|	|	| V |
16+25	0.5829	0.24	Q |	|	|	| V |
16+30	0.5842	0.20	Q |	|	|	| V |
16+35	0.5854	0.16	Q |	|	|	| V |
16+40	0.5863	0.14	Q |	|	|	| V |
16+45	0.5871	0.11	Q |	|	|	| V |
16+50	0.5877	0.09	Q |	|	|	| V |
16+55	0.5883	0.08	Q |	|	|	| V |
17+ 0	0.5887	0.07	Q |	|	|	| V |
17+ 5	0.5892	0.06	Q |	|	|	| V |
17+10	0.5895	0.06	Q |	|	|	| V |
17+15	0.5899	0.05	Q |	|	|	| V |
17+20	0.5903	0.05	Q |	|	|	| V |
17+25	0.5906	0.05	Q |	|	|	| V |
17+30	0.5910	0.05	Q |	|	|	| V|
17+35	0.5913	0.05	Q |	|	|	| V|
17+40	0.5916	0.04	Q |	|	|	| V|
17+45	0.5919	0.04	Q |	|	|	| V|
17+50	0.5922	0.04	Q |	|	|	| V|
17+55	0.5925	0.04	Q |	|	|	| V|
18+ 0	0.5928	0.04	Q |	|	|	| V|
18+ 5	0.5931	0.04	Q |	|	|	| V|
18+10	0.5933	0.04	Q |	|	|	| V|
18+15	0.5936	0.04	Q |	|	|	| V|
18+20	0.5939	0.04	Q |	|	|	| V|
18+25	0.5941	0.04	Q |	|	|	| V|
18+30	0.5944	0.04	Q |	|	|	| V|
18+35	0.5947	0.04	Q |	|	|	| V|
18+40	0.5949	0.04	Q |	|	|	| V|
18+45	0.5951	0.03	Q |	|	|	| V|
18+50	0.5953	0.03	Q |	|	|	| V|
18+55	0.5955	0.03	Q |	|	|	| V|
19+ 0	0.5957	0.03	Q |	|	|	| V|
19+ 5	0.5959	0.02	Q |	|	|	| V|
19+10	0.5960	0.02	Q |	|	|	| V|
19+15	0.5962	0.03	Q |	|	|	| V|
19+20	0.5964	0.03	Q |	|	|	| V|
19+25	0.5966	0.03	Q |	|	|	| V|
19+30	0.5968	0.03	Q |	|	|	| V|
19+35	0.5971	0.03	Q |	|	|	| V|
19+40	0.5973	0.03	Q |	|	|	| V|

19+45	0.5975	0.03	Q	|	|	|	V|
19+50	0.5977	0.03	Q	|	|	|	V|
19+55	0.5979	0.03	Q	|	|	|	V|
20+ 0	0.5980	0.02	Q	|	|	|	V|
20+ 5	0.5982	0.02	Q	|	|	|	V|
20+10	0.5984	0.02	Q	|	|	|	V|
20+15	0.5985	0.03	Q	|	|	|	V|
20+20	0.5987	0.03	Q	|	|	|	V|
20+25	0.5989	0.03	Q	|	|	|	V|
20+30	0.5991	0.03	Q	|	|	|	V|
20+35	0.5993	0.03	Q	|	|	|	V|
20+40	0.5995	0.03	Q	|	|	|	V|
20+45	0.5997	0.03	Q	|	|	|	V|
20+50	0.5998	0.03	Q	|	|	|	V|
20+55	0.6000	0.03	Q	|	|	|	V|
21+ 0	0.6002	0.02	Q	|	|	|	V|
21+ 5	0.6003	0.02	Q	|	|	|	V|
21+10	0.6005	0.02	Q	|	|	|	V|
21+15	0.6007	0.02	Q	|	|	|	V|
21+20	0.6008	0.03	Q	|	|	|	V|
21+25	0.6010	0.02	Q	|	|	|	V|
21+30	0.6012	0.02	Q	|	|	|	V|
21+35	0.6013	0.02	Q	|	|	|	V|
21+40	0.6015	0.02	Q	|	|	|	V|
21+45	0.6016	0.02	Q	|	|	|	V|
21+50	0.6018	0.03	Q	|	|	|	V|
21+55	0.6020	0.02	Q	|	|	|	V|
22+ 0	0.6021	0.02	Q	|	|	|	V|
22+ 5	0.6023	0.02	Q	|	|	|	V|
22+10	0.6024	0.02	Q	|	|	|	V|
22+15	0.6026	0.02	Q	|	|	|	V|
22+20	0.6028	0.03	Q	|	|	|	V|
22+25	0.6029	0.02	Q	|	|	|	V|
22+30	0.6031	0.02	Q	|	|	|	V|
22+35	0.6032	0.02	Q	|	|	|	V|
22+40	0.6034	0.02	Q	|	|	|	V|
22+45	0.6035	0.02	Q	|	|	|	V|
22+50	0.6036	0.02	Q	|	|	|	V|
22+55	0.6038	0.02	Q	|	|	|	V|
23+ 0	0.6039	0.02	Q	|	|	|	V|
23+ 5	0.6040	0.02	Q	|	|	|	V|
23+10	0.6042	0.02	Q	|	|	|	V|
23+15	0.6043	0.02	Q	|	|	|	V|
23+20	0.6044	0.02	Q	|	|	|	V|
23+25	0.6045	0.02	Q	|	|	|	V|
23+30	0.6047	0.02	Q	|	|	|	V|
23+35	0.6048	0.02	Q	|	|	|	V|
23+40	0.6049	0.02	Q	|	|	|	V|
23+45	0.6051	0.02	Q	|	|	|	V|
23+50	0.6052	0.02	Q	|	|	|	V|
23+55	0.6053	0.02	Q	|	|	|	V|
24+ 0	0.6054	0.02	Q	|	|	|	V|
24+ 5	0.6056	0.02	Q	|	|	|	V|
24+10	0.6057	0.01	Q	|	|	|	V|
24+15	0.6057	0.01	Q	|	|	|	V|
24+20	0.6058	0.01	Q	|	|	|	V|
24+25	0.6058	0.00	Q	|	|	|	V|
24+30	0.6058	0.00	Q	|	|	|	V|
24+35	0.6058	0.00	Q	|	|	|	V|
24+40	0.6059	0.00	Q	|	|	|	V|

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   24+45       0.6059      0.00  Q          |          |          |         V|
   24+50       0.6059      0.00  Q          |          |          |         V|
   24+55       0.6059      0.00  Q          |          |          |         V|
   25+ 0       0.6059      0.00  Q          |          |          |         V|
   25+ 5       0.6059      0.00  Q          |          |          |         V|
   25+10       0.6059      0.00  Q          |          |          |         V|
   25+15       0.6059      0.00  Q          |          |          |         V|
   25+20       0.6059      0.00  Q          |          |          |         V|
   25+25       0.6059      0.00  Q          |          |          |         V|
   25+30       0.6059      0.00  Q          |          |          |         V|
   25+35       0.6059      0.00  Q          |          |          |          V
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APPENDIX C.2

2-YEAR HYDROLOGY CALCULATIONS (EXISTING)

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 10/18/23 File: 2242.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0013 EVANS ROAD (MENIFEE INDUSTRIAL 3)
2-YEAR, 24-HOUR STORM EVENT
PRE DEVELOPMENT
2023.10.18

Drainage Area = 6.79(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 6.79(Ac.) = 0.011 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.201 Hr.
Lag time = 12.04 Min.
25% of lag time = 3.01 Min.
40% of lag time = 4.81 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]
6.79	2.05	13.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
6.79	5.32	36.12

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.050(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 2.050(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.050(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
6.790	81.00	0.200

Total Area Entered = 6.79(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
81.0	64.4	0.422	0.200	0.346	1.000	0.346
					Sum (F) =	0.346

Area averaged mean soil loss (F) (In/Hr) = 0.346
Minimum soil loss rate ((In/Hr)) = 0.173
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	41.542	4.612	0.316
2	0.167	83.084	19.113	1.308
3	0.250	124.626	27.509	1.882
4	0.333	166.168	16.681	1.141
5	0.417	207.710	8.111	0.555
6	0.500	249.252	5.250	0.359
7	0.583	290.794	3.938	0.269
8	0.667	332.336	2.968	0.203
9	0.750	373.878	2.395	0.164
10	0.833	415.420	1.854	0.127
11	0.917	456.962	1.427	0.098
12	1.000	498.504	1.275	0.087
13	1.083	540.047	1.092	0.075
14	1.167	581.589	0.866	0.059
15	1.250	623.131	0.727	0.050
16	1.333	664.673	0.588	0.040
17	1.417	706.215	0.450	0.031
18	1.500	747.757	0.415	0.028
19	1.583	789.299	0.415	0.028
20	1.667	830.841	0.315	0.022
			Sum = 100.000	Sum= 6.843

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.614)		0.015	0.002
2	0.17	0.07	0.016	(0.612)		0.015	0.002
3	0.25	0.07	0.016	(0.609)		0.015	0.002
4	0.33	0.10	0.025	(0.607)		0.022	0.002
5	0.42	0.10	0.025	(0.605)		0.022	0.002

6	0.50	0.10	0.025	(0.602)	0.022	0.002
7	0.58	0.10	0.025	(0.600)	0.022	0.002
8	0.67	0.10	0.025	(0.598)	0.022	0.002
9	0.75	0.10	0.025	(0.595)	0.022	0.002
10	0.83	0.13	0.033	(0.593)	0.030	0.003
11	0.92	0.13	0.033	(0.591)	0.030	0.003
12	1.00	0.13	0.033	(0.588)	0.030	0.003
13	1.08	0.10	0.025	(0.586)	0.022	0.002
14	1.17	0.10	0.025	(0.584)	0.022	0.002
15	1.25	0.10	0.025	(0.581)	0.022	0.002
16	1.33	0.10	0.025	(0.579)	0.022	0.002
17	1.42	0.10	0.025	(0.577)	0.022	0.002
18	1.50	0.10	0.025	(0.574)	0.022	0.002
19	1.58	0.10	0.025	(0.572)	0.022	0.002
20	1.67	0.10	0.025	(0.570)	0.022	0.002
21	1.75	0.10	0.025	(0.568)	0.022	0.002
22	1.83	0.13	0.033	(0.565)	0.030	0.003
23	1.92	0.13	0.033	(0.563)	0.030	0.003
24	2.00	0.13	0.033	(0.561)	0.030	0.003
25	2.08	0.13	0.033	(0.558)	0.030	0.003
26	2.17	0.13	0.033	(0.556)	0.030	0.003
27	2.25	0.13	0.033	(0.554)	0.030	0.003
28	2.33	0.13	0.033	(0.552)	0.030	0.003
29	2.42	0.13	0.033	(0.549)	0.030	0.003
30	2.50	0.13	0.033	(0.547)	0.030	0.003
31	2.58	0.17	0.041	(0.545)	0.037	0.004
32	2.67	0.17	0.041	(0.543)	0.037	0.004
33	2.75	0.17	0.041	(0.540)	0.037	0.004
34	2.83	0.17	0.041	(0.538)	0.037	0.004
35	2.92	0.17	0.041	(0.536)	0.037	0.004
36	3.00	0.17	0.041	(0.534)	0.037	0.004
37	3.08	0.17	0.041	(0.532)	0.037	0.004
38	3.17	0.17	0.041	(0.529)	0.037	0.004
39	3.25	0.17	0.041	(0.527)	0.037	0.004
40	3.33	0.17	0.041	(0.525)	0.037	0.004
41	3.42	0.17	0.041	(0.523)	0.037	0.004
42	3.50	0.17	0.041	(0.521)	0.037	0.004
43	3.58	0.17	0.041	(0.518)	0.037	0.004
44	3.67	0.17	0.041	(0.516)	0.037	0.004
45	3.75	0.17	0.041	(0.514)	0.037	0.004
46	3.83	0.20	0.049	(0.512)	0.044	0.005
47	3.92	0.20	0.049	(0.510)	0.044	0.005
48	4.00	0.20	0.049	(0.508)	0.044	0.005
49	4.08	0.20	0.049	(0.505)	0.044	0.005
50	4.17	0.20	0.049	(0.503)	0.044	0.005
51	4.25	0.20	0.049	(0.501)	0.044	0.005
52	4.33	0.23	0.057	(0.499)	0.052	0.006
53	4.42	0.23	0.057	(0.497)	0.052	0.006
54	4.50	0.23	0.057	(0.495)	0.052	0.006
55	4.58	0.23	0.057	(0.493)	0.052	0.006
56	4.67	0.23	0.057	(0.490)	0.052	0.006
57	4.75	0.23	0.057	(0.488)	0.052	0.006
58	4.83	0.27	0.066	(0.486)	0.059	0.007
59	4.92	0.27	0.066	(0.484)	0.059	0.007
60	5.00	0.27	0.066	(0.482)	0.059	0.007
61	5.08	0.20	0.049	(0.480)	0.044	0.005
62	5.17	0.20	0.049	(0.478)	0.044	0.005
63	5.25	0.20	0.049	(0.476)	0.044	0.005
64	5.33	0.23	0.057	(0.474)	0.052	0.006
65	5.42	0.23	0.057	(0.472)	0.052	0.006

66	5.50	0.23	0.057	(0.470)	0.052	0.006
67	5.58	0.27	0.066	(0.468)	0.059	0.007
68	5.67	0.27	0.066	(0.465)	0.059	0.007
69	5.75	0.27	0.066	(0.463)	0.059	0.007
70	5.83	0.27	0.066	(0.461)	0.059	0.007
71	5.92	0.27	0.066	(0.459)	0.059	0.007
72	6.00	0.27	0.066	(0.457)	0.059	0.007
73	6.08	0.30	0.074	(0.455)	0.066	0.007
74	6.17	0.30	0.074	(0.453)	0.066	0.007
75	6.25	0.30	0.074	(0.451)	0.066	0.007
76	6.33	0.30	0.074	(0.449)	0.066	0.007
77	6.42	0.30	0.074	(0.447)	0.066	0.007
78	6.50	0.30	0.074	(0.445)	0.066	0.007
79	6.58	0.33	0.082	(0.443)	0.074	0.008
80	6.67	0.33	0.082	(0.441)	0.074	0.008
81	6.75	0.33	0.082	(0.439)	0.074	0.008
82	6.83	0.33	0.082	(0.437)	0.074	0.008
83	6.92	0.33	0.082	(0.435)	0.074	0.008
84	7.00	0.33	0.082	(0.433)	0.074	0.008
85	7.08	0.33	0.082	(0.431)	0.074	0.008
86	7.17	0.33	0.082	(0.429)	0.074	0.008
87	7.25	0.33	0.082	(0.427)	0.074	0.008
88	7.33	0.37	0.090	(0.425)	0.081	0.009
89	7.42	0.37	0.090	(0.423)	0.081	0.009
90	7.50	0.37	0.090	(0.422)	0.081	0.009
91	7.58	0.40	0.098	(0.420)	0.089	0.010
92	7.67	0.40	0.098	(0.418)	0.089	0.010
93	7.75	0.40	0.098	(0.416)	0.089	0.010
94	7.83	0.43	0.107	(0.414)	0.096	0.011
95	7.92	0.43	0.107	(0.412)	0.096	0.011
96	8.00	0.43	0.107	(0.410)	0.096	0.011
97	8.08	0.50	0.123	(0.408)	0.111	0.012
98	8.17	0.50	0.123	(0.406)	0.111	0.012
99	8.25	0.50	0.123	(0.404)	0.111	0.012
100	8.33	0.50	0.123	(0.402)	0.111	0.012
101	8.42	0.50	0.123	(0.401)	0.111	0.012
102	8.50	0.50	0.123	(0.399)	0.111	0.012
103	8.58	0.53	0.131	(0.397)	0.118	0.013
104	8.67	0.53	0.131	(0.395)	0.118	0.013
105	8.75	0.53	0.131	(0.393)	0.118	0.013
106	8.83	0.57	0.139	(0.391)	0.125	0.014
107	8.92	0.57	0.139	(0.389)	0.125	0.014
108	9.00	0.57	0.139	(0.388)	0.125	0.014
109	9.08	0.63	0.156	(0.386)	0.140	0.016
110	9.17	0.63	0.156	(0.384)	0.140	0.016
111	9.25	0.63	0.156	(0.382)	0.140	0.016
112	9.33	0.67	0.164	(0.380)	0.148	0.016
113	9.42	0.67	0.164	(0.378)	0.148	0.016
114	9.50	0.67	0.164	(0.377)	0.148	0.016
115	9.58	0.70	0.172	(0.375)	0.155	0.017
116	9.67	0.70	0.172	(0.373)	0.155	0.017
117	9.75	0.70	0.172	(0.371)	0.155	0.017
118	9.83	0.73	0.180	(0.369)	0.162	0.018
119	9.92	0.73	0.180	(0.368)	0.162	0.018
120	10.00	0.73	0.180	(0.366)	0.162	0.018
121	10.08	0.50	0.123	(0.364)	0.111	0.012
122	10.17	0.50	0.123	(0.362)	0.111	0.012
123	10.25	0.50	0.123	(0.361)	0.111	0.012
124	10.33	0.50	0.123	(0.359)	0.111	0.012
125	10.42	0.50	0.123	(0.357)	0.111	0.012

126	10.50	0.50	0.123	(0.355)	0.111	0.012
127	10.58	0.67	0.164	(0.354)	0.148	0.016
128	10.67	0.67	0.164	(0.352)	0.148	0.016
129	10.75	0.67	0.164	(0.350)	0.148	0.016
130	10.83	0.67	0.164	(0.348)	0.148	0.016
131	10.92	0.67	0.164	(0.347)	0.148	0.016
132	11.00	0.67	0.164	(0.345)	0.148	0.016
133	11.08	0.63	0.156	(0.343)	0.140	0.016
134	11.17	0.63	0.156	(0.342)	0.140	0.016
135	11.25	0.63	0.156	(0.340)	0.140	0.016
136	11.33	0.63	0.156	(0.338)	0.140	0.016
137	11.42	0.63	0.156	(0.337)	0.140	0.016
138	11.50	0.63	0.156	(0.335)	0.140	0.016
139	11.58	0.57	0.139	(0.333)	0.125	0.014
140	11.67	0.57	0.139	(0.332)	0.125	0.014
141	11.75	0.57	0.139	(0.330)	0.125	0.014
142	11.83	0.60	0.148	(0.328)	0.133	0.015
143	11.92	0.60	0.148	(0.327)	0.133	0.015
144	12.00	0.60	0.148	(0.325)	0.133	0.015
145	12.08	0.83	0.205	(0.323)	0.184	0.020
146	12.17	0.83	0.205	(0.322)	0.184	0.020
147	12.25	0.83	0.205	(0.320)	0.184	0.020
148	12.33	0.87	0.213	(0.319)	0.192	0.021
149	12.42	0.87	0.213	(0.317)	0.192	0.021
150	12.50	0.87	0.213	(0.315)	0.192	0.021
151	12.58	0.93	0.230	(0.314)	0.207	0.023
152	12.67	0.93	0.230	(0.312)	0.207	0.023
153	12.75	0.93	0.230	(0.311)	0.207	0.023
154	12.83	0.97	0.238	(0.309)	0.214	0.024
155	12.92	0.97	0.238	(0.307)	0.214	0.024
156	13.00	0.97	0.238	(0.306)	0.214	0.024
157	13.08	1.13	0.279	(0.304)	0.251	0.028
158	13.17	1.13	0.279	(0.303)	0.251	0.028
159	13.25	1.13	0.279	(0.301)	0.251	0.028
160	13.33	1.13	0.279	(0.300)	0.251	0.028
161	13.42	1.13	0.279	(0.298)	0.251	0.028
162	13.50	1.13	0.279	(0.297)	0.251	0.028
163	13.58	0.77	0.189	(0.295)	0.170	0.019
164	13.67	0.77	0.189	(0.294)	0.170	0.019
165	13.75	0.77	0.189	(0.292)	0.170	0.019
166	13.83	0.77	0.189	(0.291)	0.170	0.019
167	13.92	0.77	0.189	(0.289)	0.170	0.019
168	14.00	0.77	0.189	(0.288)	0.170	0.019
169	14.08	0.90	0.221	(0.286)	0.199	0.022
170	14.17	0.90	0.221	(0.285)	0.199	0.022
171	14.25	0.90	0.221	(0.283)	0.199	0.022
172	14.33	0.87	0.213	(0.282)	0.192	0.021
173	14.42	0.87	0.213	(0.280)	0.192	0.021
174	14.50	0.87	0.213	(0.279)	0.192	0.021
175	14.58	0.87	0.213	(0.278)	0.192	0.021
176	14.67	0.87	0.213	(0.276)	0.192	0.021
177	14.75	0.87	0.213	(0.275)	0.192	0.021
178	14.83	0.83	0.205	(0.273)	0.184	0.020
179	14.92	0.83	0.205	(0.272)	0.184	0.020
180	15.00	0.83	0.205	(0.271)	0.184	0.020
181	15.08	0.80	0.197	(0.269)	0.177	0.020
182	15.17	0.80	0.197	(0.268)	0.177	0.020
183	15.25	0.80	0.197	(0.266)	0.177	0.020
184	15.33	0.77	0.189	(0.265)	0.170	0.019
185	15.42	0.77	0.189	(0.264)	0.170	0.019

186	15.50	0.77	0.189	(0.262)	0.170	0.019
187	15.58	0.63	0.156	(0.261)	0.140	0.016
188	15.67	0.63	0.156	(0.260)	0.140	0.016
189	15.75	0.63	0.156	(0.258)	0.140	0.016
190	15.83	0.63	0.156	(0.257)	0.140	0.016
191	15.92	0.63	0.156	(0.256)	0.140	0.016
192	16.00	0.63	0.156	(0.254)	0.140	0.016
193	16.08	0.13	0.033	(0.253)	0.030	0.003
194	16.17	0.13	0.033	(0.252)	0.030	0.003
195	16.25	0.13	0.033	(0.251)	0.030	0.003
196	16.33	0.13	0.033	(0.249)	0.030	0.003
197	16.42	0.13	0.033	(0.248)	0.030	0.003
198	16.50	0.13	0.033	(0.247)	0.030	0.003
199	16.58	0.10	0.025	(0.245)	0.022	0.002
200	16.67	0.10	0.025	(0.244)	0.022	0.002
201	16.75	0.10	0.025	(0.243)	0.022	0.002
202	16.83	0.10	0.025	(0.242)	0.022	0.002
203	16.92	0.10	0.025	(0.241)	0.022	0.002
204	17.00	0.10	0.025	(0.239)	0.022	0.002
205	17.08	0.17	0.041	(0.238)	0.037	0.004
206	17.17	0.17	0.041	(0.237)	0.037	0.004
207	17.25	0.17	0.041	(0.236)	0.037	0.004
208	17.33	0.17	0.041	(0.235)	0.037	0.004
209	17.42	0.17	0.041	(0.233)	0.037	0.004
210	17.50	0.17	0.041	(0.232)	0.037	0.004
211	17.58	0.17	0.041	(0.231)	0.037	0.004
212	17.67	0.17	0.041	(0.230)	0.037	0.004
213	17.75	0.17	0.041	(0.229)	0.037	0.004
214	17.83	0.13	0.033	(0.228)	0.030	0.003
215	17.92	0.13	0.033	(0.226)	0.030	0.003
216	18.00	0.13	0.033	(0.225)	0.030	0.003
217	18.08	0.13	0.033	(0.224)	0.030	0.003
218	18.17	0.13	0.033	(0.223)	0.030	0.003
219	18.25	0.13	0.033	(0.222)	0.030	0.003
220	18.33	0.13	0.033	(0.221)	0.030	0.003
221	18.42	0.13	0.033	(0.220)	0.030	0.003
222	18.50	0.13	0.033	(0.219)	0.030	0.003
223	18.58	0.10	0.025	(0.218)	0.022	0.002
224	18.67	0.10	0.025	(0.217)	0.022	0.002
225	18.75	0.10	0.025	(0.216)	0.022	0.002
226	18.83	0.07	0.016	(0.215)	0.015	0.002
227	18.92	0.07	0.016	(0.214)	0.015	0.002
228	19.00	0.07	0.016	(0.213)	0.015	0.002
229	19.08	0.10	0.025	(0.212)	0.022	0.002
230	19.17	0.10	0.025	(0.211)	0.022	0.002
231	19.25	0.10	0.025	(0.210)	0.022	0.002
232	19.33	0.13	0.033	(0.209)	0.030	0.003
233	19.42	0.13	0.033	(0.208)	0.030	0.003
234	19.50	0.13	0.033	(0.207)	0.030	0.003
235	19.58	0.10	0.025	(0.206)	0.022	0.002
236	19.67	0.10	0.025	(0.205)	0.022	0.002
237	19.75	0.10	0.025	(0.204)	0.022	0.002
238	19.83	0.07	0.016	(0.203)	0.015	0.002
239	19.92	0.07	0.016	(0.202)	0.015	0.002
240	20.00	0.07	0.016	(0.201)	0.015	0.002
241	20.08	0.10	0.025	(0.200)	0.022	0.002
242	20.17	0.10	0.025	(0.199)	0.022	0.002
243	20.25	0.10	0.025	(0.199)	0.022	0.002
244	20.33	0.10	0.025	(0.198)	0.022	0.002
245	20.42	0.10	0.025	(0.197)	0.022	0.002

246	20.50	0.10	0.025	(0.196)	0.022	0.002
247	20.58	0.10	0.025	(0.195)	0.022	0.002
248	20.67	0.10	0.025	(0.194)	0.022	0.002
249	20.75	0.10	0.025	(0.194)	0.022	0.002
250	20.83	0.07	0.016	(0.193)	0.015	0.002
251	20.92	0.07	0.016	(0.192)	0.015	0.002
252	21.00	0.07	0.016	(0.191)	0.015	0.002
253	21.08	0.10	0.025	(0.190)	0.022	0.002
254	21.17	0.10	0.025	(0.190)	0.022	0.002
255	21.25	0.10	0.025	(0.189)	0.022	0.002
256	21.33	0.07	0.016	(0.188)	0.015	0.002
257	21.42	0.07	0.016	(0.188)	0.015	0.002
258	21.50	0.07	0.016	(0.187)	0.015	0.002
259	21.58	0.10	0.025	(0.186)	0.022	0.002
260	21.67	0.10	0.025	(0.185)	0.022	0.002
261	21.75	0.10	0.025	(0.185)	0.022	0.002
262	21.83	0.07	0.016	(0.184)	0.015	0.002
263	21.92	0.07	0.016	(0.184)	0.015	0.002
264	22.00	0.07	0.016	(0.183)	0.015	0.002
265	22.08	0.10	0.025	(0.182)	0.022	0.002
266	22.17	0.10	0.025	(0.182)	0.022	0.002
267	22.25	0.10	0.025	(0.181)	0.022	0.002
268	22.33	0.07	0.016	(0.181)	0.015	0.002
269	22.42	0.07	0.016	(0.180)	0.015	0.002
270	22.50	0.07	0.016	(0.179)	0.015	0.002
271	22.58	0.07	0.016	(0.179)	0.015	0.002
272	22.67	0.07	0.016	(0.178)	0.015	0.002
273	22.75	0.07	0.016	(0.178)	0.015	0.002
274	22.83	0.07	0.016	(0.178)	0.015	0.002
275	22.92	0.07	0.016	(0.177)	0.015	0.002
276	23.00	0.07	0.016	(0.177)	0.015	0.002
277	23.08	0.07	0.016	(0.176)	0.015	0.002
278	23.17	0.07	0.016	(0.176)	0.015	0.002
279	23.25	0.07	0.016	(0.175)	0.015	0.002
280	23.33	0.07	0.016	(0.175)	0.015	0.002
281	23.42	0.07	0.016	(0.175)	0.015	0.002
282	23.50	0.07	0.016	(0.174)	0.015	0.002
283	23.58	0.07	0.016	(0.174)	0.015	0.002
284	23.67	0.07	0.016	(0.174)	0.015	0.002
285	23.75	0.07	0.016	(0.174)	0.015	0.002
286	23.83	0.07	0.016	(0.173)	0.015	0.002
287	23.92	0.07	0.016	(0.173)	0.015	0.002
288	24.00	0.07	0.016	(0.173)	0.015	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 2.5

Flood volume = Effective rainfall 0.20(In)
times area 6.8(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)
Total soil loss = 1.84(In)
Total soil loss = 1.044(Ac.Ft)
Total rainfall = 2.05(In)
Flood volume = 5052.7 Cubic Feet
Total soil loss = 45474.4 Cubic Feet

Peak flow rate of this hydrograph = 0.184(CFS)

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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))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q				
0+10	0.0000	0.00	Q				
0+15	0.0001	0.01	Q				
0+20	0.0001	0.01	Q				
0+25	0.0002	0.01	Q				
0+30	0.0003	0.01	Q				
0+35	0.0004	0.01	Q				
0+40	0.0005	0.01	Q				
0+45	0.0006	0.01	Q				
0+50	0.0007	0.02	Q				
0+55	0.0008	0.02	Q				
1+ 0	0.0009	0.02	Q				
1+ 5	0.0010	0.02	Q				
1+10	0.0012	0.02	Q				
1+15	0.0013	0.02	Q				
1+20	0.0014	0.02	Q				
1+25	0.0015	0.02	Q				
1+30	0.0017	0.02	Q				
1+35	0.0018	0.02	Q				
1+40	0.0019	0.02	Q				
1+45	0.0020	0.02	Q				
1+50	0.0021	0.02	Q				
1+55	0.0023	0.02	Q				
2+ 0	0.0024	0.02	Q				
2+ 5	0.0025	0.02	Q				
2+10	0.0027	0.02	Q				
2+15	0.0028	0.02	Q				
2+20	0.0030	0.02	QV				
2+25	0.0031	0.02	QV				
2+30	0.0033	0.02	QV				
2+35	0.0034	0.02	QV				
2+40	0.0036	0.02	QV				
2+45	0.0038	0.03	QV				
2+50	0.0039	0.03	QV				
2+55	0.0041	0.03	QV				
3+ 0	0.0043	0.03	QV				
3+ 5	0.0045	0.03	QV				
3+10	0.0047	0.03	QV				
3+15	0.0049	0.03	QV				
3+20	0.0051	0.03	QV				
3+25	0.0053	0.03	QV				
3+30	0.0055	0.03	QV				
3+35	0.0056	0.03	QV				
3+40	0.0058	0.03	Q V				
3+45	0.0060	0.03	Q V				
3+50	0.0062	0.03	Q V				
3+55	0.0064	0.03	Q V				
4+ 0	0.0066	0.03	Q V				
4+ 5	0.0069	0.03	Q V				
4+10	0.0071	0.03	Q V				
4+15	0.0073	0.03	Q V				
4+20	0.0075	0.03	Q V				
4+25	0.0078	0.03	Q V				
4+30	0.0080	0.04	Q V				
4+35	0.0083	0.04	Q V				
4+40	0.0085	0.04	Q V				

4+45	0.0088	0.04	Q	V	|	|	|	|
4+50	0.0091	0.04	Q	V	|	|	|	|
4+55	0.0093	0.04	Q	V	|	|	|	|
5+ 0	0.0096	0.04	Q	V	|	|	|	|
5+ 5	0.0099	0.04	Q	V	|	|	|	|
5+10	0.0102	0.04	Q	V	|	|	|	|
5+15	0.0104	0.04	Q	V	|	|	|	|
5+20	0.0107	0.04	Q	V	|	|	|	|
5+25	0.0110	0.04	Q	V	|	|	|	|
5+30	0.0112	0.04	Q	V	|	|	|	|
5+35	0.0115	0.04	Q	V	|	|	|	|
5+40	0.0118	0.04	Q	V	|	|	|	|
5+45	0.0120	0.04	Q	V	|	|	|	|
5+50	0.0123	0.04	Q	V	|	|	|	|
5+55	0.0126	0.04	Q	V	|	|	|	|
6+ 0	0.0129	0.04	Q	V	|	|	|	|
6+ 5	0.0132	0.04	Q	V	|	|	|	|
6+10	0.0136	0.05	Q	V	|	|	|	|
6+15	0.0139	0.05	Q	V	|	|	|	|
6+20	0.0142	0.05	Q	V	|	|	|	|
6+25	0.0146	0.05	Q	V	|	|	|	|
6+30	0.0149	0.05	Q	V	|	|	|	|
6+35	0.0152	0.05	Q	V	|	|	|	|
6+40	0.0156	0.05	Q	V	|	|	|	|
6+45	0.0160	0.05	Q	V	|	|	|	|
6+50	0.0163	0.05	Q	V	|	|	|	|
6+55	0.0167	0.05	Q	V	|	|	|	|
7+ 0	0.0171	0.05	Q	V	|	|	|	|
7+ 5	0.0175	0.06	Q	V	|	|	|	|
7+10	0.0178	0.06	Q	V	|	|	|	|
7+15	0.0182	0.06	Q	V	|	|	|	|
7+20	0.0186	0.06	Q	V	|	|	|	|
7+25	0.0190	0.06	Q	V	|	|	|	|
7+30	0.0194	0.06	Q	V	|	|	|	|
7+35	0.0198	0.06	Q	V	|	|	|	|
7+40	0.0202	0.06	Q	V	|	|	|	|
7+45	0.0207	0.06	Q	V	|	|	|	|
7+50	0.0211	0.06	Q	V	|	|	|	|
7+55	0.0216	0.07	Q	V	|	|	|	|
8+ 0	0.0221	0.07	Q	V	|	|	|	|
8+ 5	0.0225	0.07	Q	V	|	|	|	|
8+10	0.0230	0.07	Q	V	|	|	|	|
8+15	0.0236	0.08	Q	V	|	|	|	|
8+20	0.0241	0.08	Q	V	|	|	|	|
8+25	0.0247	0.08	Q	V	|	|	|	|
8+30	0.0252	0.08	Q	V	|	|	|	|
8+35	0.0258	0.08	Q	V	|	|	|	|
8+40	0.0264	0.08	Q	V	|	|	|	|
8+45	0.0270	0.09	Q	V	|	|	|	|
8+50	0.0276	0.09	Q	V	|	|	|	|
8+55	0.0282	0.09	Q	V	|	|	|	|
9+ 0	0.0288	0.09	Q	V	|	|	|	|
9+ 5	0.0294	0.09	Q	V	|	|	|	|
9+10	0.0301	0.10	Q	V	|	|	|	|
9+15	0.0308	0.10	Q	V	|	|	|	|
9+20	0.0315	0.10	Q	V	|	|	|	|
9+25	0.0322	0.10	Q	V	|	|	|	|
9+30	0.0329	0.11	Q	V	|	|	|	|
9+35	0.0337	0.11	Q	V	|	|	|	|
9+40	0.0344	0.11	Q	V	|	|	|	|

9+45	0.0352	0.11	Q	| V |	|	|
9+50	0.0360	0.11	Q	| V |	|	|
9+55	0.0368	0.12	Q	| V |	|	|
10+ 0	0.0376	0.12	Q	| V |	|	|
10+ 5	0.0384	0.12	Q	| V |	|	|
10+10	0.0392	0.11	Q	| V |	|	|
10+15	0.0399	0.10	Q	| V |	|	|
10+20	0.0406	0.10	Q	| V |	|	|
10+25	0.0412	0.09	Q	| V |	|	|
10+30	0.0418	0.09	Q	| V |	|	|
10+35	0.0424	0.09	Q	| V |	|	|
10+40	0.0431	0.09	Q	| V |	|	|
10+45	0.0438	0.10	Q	| V |	|	|
10+50	0.0445	0.11	Q	| V |	|	|
10+55	0.0453	0.11	Q	| V |	|	|
11+ 0	0.0460	0.11	Q	| V |	|	|
11+ 5	0.0468	0.11	Q	| V |	|	|
11+10	0.0475	0.11	Q	| V |	|	|
11+15	0.0483	0.11	Q	| V |	|	|
11+20	0.0490	0.11	Q	| V |	|	|
11+25	0.0497	0.11	Q	| V |	|	|
11+30	0.0505	0.11	Q	| V |	|	|
11+35	0.0512	0.11	Q	| V |	|	|
11+40	0.0519	0.10	Q	| V |	|	|
11+45	0.0526	0.10	Q	| V |	|	|
11+50	0.0533	0.10	Q	| V |	|	|
11+55	0.0540	0.10	Q	| V |	|	|
12+ 0	0.0547	0.10	Q	| V |	|	|
12+ 5	0.0554	0.10	Q	| V |	|	|
12+10	0.0561	0.11	Q	| V |	|	|
12+15	0.0570	0.12	Q	| V |	|	|
12+20	0.0578	0.13	Q	| V |	|	|
12+25	0.0588	0.13	Q	| V |	|	|
12+30	0.0597	0.14	Q	| V |	|	|
12+35	0.0607	0.14	Q	| V |	|	|
12+40	0.0616	0.14	Q	| V |	|	|
12+45	0.0626	0.15	Q	| V |	|	|
12+50	0.0637	0.15	Q	| V |	|	|
12+55	0.0647	0.15	Q	| V |	|	|
13+ 0	0.0658	0.16	Q	| V |	|	|
13+ 5	0.0669	0.16	Q	| V |	|	|
13+10	0.0680	0.17	Q	| V |	|	|
13+15	0.0692	0.17	Q	| V |	|	|
13+20	0.0705	0.18	Q	| V |	|	|
13+25	0.0717	0.18	Q	| V |	|	|
13+30	0.0730	0.18	Q	| V |	|	|
13+35	0.0742	0.18	Q	| V |	|	|
13+40	0.0754	0.17	Q	| V |	|	|
13+45	0.0765	0.16	Q	| V |	|	|
13+50	0.0775	0.15	Q	| V |	|	|
13+55	0.0785	0.14	Q	| V |	|	|
14+ 0	0.0795	0.14	Q	| V |	|	|
14+ 5	0.0804	0.14	Q	| V |	|	|
14+10	0.0814	0.14	Q	| V |	|	|
14+15	0.0824	0.15	Q	| V |	|	|
14+20	0.0834	0.15	Q	| V |	|	|
14+25	0.0844	0.15	Q	| V |	|	|
14+30	0.0854	0.15	Q	| V |	|	|
14+35	0.0864	0.15	Q	| V |	|	|
14+40	0.0875	0.15	Q	| V |	|	|

14+45	0.0885	0.15	Q	|	|	V |
14+50	0.0895	0.15	Q	|	|	V |
14+55	0.0905	0.14	Q	|	|	|V |
15+ 0	0.0914	0.14	Q	|	|	|V |
15+ 5	0.0924	0.14	Q	|	|	|V |
15+10	0.0934	0.14	Q	|	|	| V |
15+15	0.0943	0.14	Q	|	|	| V |
15+20	0.0953	0.14	Q	|	|	| V |
15+25	0.0962	0.14	Q	|	|	| V |
15+30	0.0971	0.13	Q	|	|	| V |
15+35	0.0980	0.13	Q	|	|	| V |
15+40	0.0989	0.13	Q	|	|	| V |
15+45	0.0997	0.12	Q	|	|	| V |
15+50	0.1005	0.12	Q	|	|	| V |
15+55	0.1013	0.11	Q	|	|	| V |
16+ 0	0.1021	0.11	Q	|	|	| V |
16+ 5	0.1028	0.11	Q	|	|	| V |
16+10	0.1034	0.09	Q	|	|	| V |
16+15	0.1039	0.07	Q	|	|	| V |
16+20	0.1042	0.05	Q	|	|	| V |
16+25	0.1045	0.04	Q	|	|	| V |
16+30	0.1048	0.04	Q	|	|	| V |
16+35	0.1051	0.04	Q	|	|	| V |
16+40	0.1053	0.03	Q	|	|	| V |
16+45	0.1055	0.03	Q	|	|	| V |
16+50	0.1056	0.03	Q	|	|	| V |
16+55	0.1058	0.02	Q	|	|	| V |
17+ 0	0.1060	0.02	Q	|	|	| V |
17+ 5	0.1061	0.02	Q	|	|	| V |
17+10	0.1063	0.02	Q	|	|	| V |
17+15	0.1064	0.02	Q	|	|	| V |
17+20	0.1066	0.03	Q	|	|	| V |
17+25	0.1068	0.03	Q	|	|	| V |
17+30	0.1070	0.03	Q	|	|	| V |
17+35	0.1072	0.03	Q	|	|	| V |
17+40	0.1074	0.03	Q	|	|	| V |
17+45	0.1075	0.03	Q	|	|	| V |
17+50	0.1077	0.03	Q	|	|	| V |
17+55	0.1079	0.03	Q	|	|	| V |
18+ 0	0.1081	0.02	Q	|	|	| V |
18+ 5	0.1082	0.02	Q	|	|	| V |
18+10	0.1084	0.02	Q	|	|	| V |
18+15	0.1086	0.02	Q	|	|	| V |
18+20	0.1087	0.02	Q	|	|	| V |
18+25	0.1089	0.02	Q	|	|	| V |
18+30	0.1090	0.02	Q	|	|	| V |
18+35	0.1092	0.02	Q	|	|	| V |
18+40	0.1093	0.02	Q	|	|	| V |
18+45	0.1095	0.02	Q	|	|	| V |
18+50	0.1096	0.02	Q	|	|	| V |
18+55	0.1097	0.02	Q	|	|	| V |
19+ 0	0.1098	0.02	Q	|	|	| V |
19+ 5	0.1099	0.01	Q	|	|	| V |
19+10	0.1100	0.01	Q	|	|	| V |
19+15	0.1101	0.02	Q	|	|	| V |
19+20	0.1103	0.02	Q	|	|	| V |
19+25	0.1104	0.02	Q	|	|	| V |
19+30	0.1105	0.02	Q	|	|	| V |
19+35	0.1106	0.02	Q	|	|	| V |
19+40	0.1108	0.02	Q	|	|	| V |

19+45	0.1109	0.02	Q	|	|	|	V |
19+50	0.1110	0.02	Q	|	|	|	V |
19+55	0.1111	0.02	Q	|	|	|	V |
20+ 0	0.1112	0.01	Q	|	|	|	V |
20+ 5	0.1113	0.01	Q	|	|	|	V |
20+10	0.1114	0.01	Q	|	|	|	V |
20+15	0.1115	0.02	Q	|	|	|	V |
20+20	0.1116	0.02	Q	|	|	|	V |
20+25	0.1118	0.02	Q	|	|	|	V |
20+30	0.1119	0.02	Q	|	|	|	V |
20+35	0.1120	0.02	Q	|	|	|	V |
20+40	0.1121	0.02	Q	|	|	|	V |
20+45	0.1122	0.02	Q	|	|	|	V |
20+50	0.1123	0.02	Q	|	|	|	V |
20+55	0.1124	0.02	Q	|	|	|	V |
21+ 0	0.1125	0.01	Q	|	|	|	V |
21+ 5	0.1126	0.01	Q	|	|	|	V |
21+10	0.1127	0.01	Q	|	|	|	V |
21+15	0.1128	0.02	Q	|	|	|	V |
21+20	0.1129	0.02	Q	|	|	|	V |
21+25	0.1130	0.01	Q	|	|	|	V |
21+30	0.1131	0.01	Q	|	|	|	V|
21+35	0.1132	0.01	Q	|	|	|	V|
21+40	0.1133	0.01	Q	|	|	|	V|
21+45	0.1134	0.01	Q	|	|	|	V|
21+50	0.1135	0.02	Q	|	|	|	V|
21+55	0.1136	0.01	Q	|	|	|	V|
22+ 0	0.1137	0.01	Q	|	|	|	V|
22+ 5	0.1138	0.01	Q	|	|	|	V|
22+10	0.1139	0.01	Q	|	|	|	V|
22+15	0.1140	0.01	Q	|	|	|	V|
22+20	0.1141	0.02	Q	|	|	|	V|
22+25	0.1142	0.01	Q	|	|	|	V|
22+30	0.1143	0.01	Q	|	|	|	V|
22+35	0.1144	0.01	Q	|	|	|	V|
22+40	0.1145	0.01	Q	|	|	|	V|
22+45	0.1145	0.01	Q	|	|	|	V|
22+50	0.1146	0.01	Q	|	|	|	V|
22+55	0.1147	0.01	Q	|	|	|	V|
23+ 0	0.1148	0.01	Q	|	|	|	V|
23+ 5	0.1149	0.01	Q	|	|	|	V|
23+10	0.1149	0.01	Q	|	|	|	V|
23+15	0.1150	0.01	Q	|	|	|	V|
23+20	0.1151	0.01	Q	|	|	|	V|
23+25	0.1152	0.01	Q	|	|	|	V|
23+30	0.1152	0.01	Q	|	|	|	V|
23+35	0.1153	0.01	Q	|	|	|	V|
23+40	0.1154	0.01	Q	|	|	|	V|
23+45	0.1155	0.01	Q	|	|	|	V|
23+50	0.1156	0.01	Q	|	|	|	V|
23+55	0.1156	0.01	Q	|	|	|	V|
24+ 0	0.1157	0.01	Q	|	|	|	V|
24+ 5	0.1158	0.01	Q	|	|	|	V|
24+10	0.1158	0.01	Q	|	|	|	V|
24+15	0.1159	0.01	Q	|	|	|	V|
24+20	0.1159	0.00	Q	|	|	|	V|
24+25	0.1159	0.00	Q	|	|	|	V|
24+30	0.1159	0.00	Q	|	|	|	V|
24+35	0.1160	0.00	Q	|	|	|	V|
24+40	0.1160	0.00	Q	|	|	|	V|

24+45	0.1160	0.00	Q				V
24+50	0.1160	0.00	Q				V
24+55	0.1160	0.00	Q				V
25+ 0	0.1160	0.00	Q				V
25+ 5	0.1160	0.00	Q				V
25+10	0.1160	0.00	Q				V
25+15	0.1160	0.00	Q				V
25+20	0.1160	0.00	Q				V
25+25	0.1160	0.00	Q				V
25+30	0.1160	0.00	Q				V
25+35	0.1160	0.00	Q				V

APPENDIX D

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (UNIT HYDROGRAPH)

APPENDIX D.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

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 10/18/23 File: 102410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0013 EVANS ROAD (MENIFEE INDUSTRIAL 3)
10-YEAR, 24-HOUR STORM EVENT
POST DEVELOPMENT
2023.10.18

Drainage Area = 6.79(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 6.79(Ac.) = 0.011 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.093 Hr.
Lag time = 5.59 Min.
25% of lag time = 1.40 Min.
40% of lag time = 2.24 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]
6.79	2.05	13.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
6.79	5.32	36.12

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.050(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.395(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 3.395(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
6.790	70.00	0.900

Total Area Entered = 6.79(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
70.0	70.0	0.362	0.900	0.069	1.000	0.069
					Sum (F) =	0.069

Area averaged mean soil loss (F) (In/Hr) = 0.069
Minimum soil loss rate ((In/Hr)) = 0.034
(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 (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	89.413	16.005	1.095
2	0.167	178.827	46.971	3.214
3	0.250	268.240	17.546	1.201
4	0.333	357.654	7.677	0.525
5	0.417	447.067	4.455	0.305
6	0.500	536.481	2.838	0.194
7	0.583	625.894	1.949	0.133
8	0.667	715.308	1.251	0.086
9	0.750	804.721	1.307	0.089
			Sum = 100.000 Sum=	6.843

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.122)		0.005	0.022
2	0.17	0.07	0.027	(0.121)		0.005	0.022
3	0.25	0.07	0.027	(0.121)		0.005	0.022
4	0.33	0.10	0.041	(0.121)		0.007	0.033
5	0.42	0.10	0.041	(0.120)		0.007	0.033
6	0.50	0.10	0.041	(0.120)		0.007	0.033
7	0.58	0.10	0.041	(0.119)		0.007	0.033
8	0.67	0.10	0.041	(0.119)		0.007	0.033
9	0.75	0.10	0.041	(0.118)		0.007	0.033
10	0.83	0.13	0.054	(0.118)		0.010	0.045
11	0.92	0.13	0.054	(0.117)		0.010	0.045
12	1.00	0.13	0.054	(0.117)		0.010	0.045
13	1.08	0.10	0.041	(0.116)		0.007	0.033
14	1.17	0.10	0.041	(0.116)		0.007	0.033
15	1.25	0.10	0.041	(0.115)		0.007	0.033
16	1.33	0.10	0.041	(0.115)		0.007	0.033

17	1.42	0.10	0.041	(0.114)	0.007	0.033
18	1.50	0.10	0.041	(0.114)	0.007	0.033
19	1.58	0.10	0.041	(0.114)	0.007	0.033
20	1.67	0.10	0.041	(0.113)	0.007	0.033
21	1.75	0.10	0.041	(0.113)	0.007	0.033
22	1.83	0.13	0.054	(0.112)	0.010	0.045
23	1.92	0.13	0.054	(0.112)	0.010	0.045
24	2.00	0.13	0.054	(0.111)	0.010	0.045
25	2.08	0.13	0.054	(0.111)	0.010	0.045
26	2.17	0.13	0.054	(0.110)	0.010	0.045
27	2.25	0.13	0.054	(0.110)	0.010	0.045
28	2.33	0.13	0.054	(0.110)	0.010	0.045
29	2.42	0.13	0.054	(0.109)	0.010	0.045
30	2.50	0.13	0.054	(0.109)	0.010	0.045
31	2.58	0.17	0.068	(0.108)	0.012	0.056
32	2.67	0.17	0.068	(0.108)	0.012	0.056
33	2.75	0.17	0.068	(0.107)	0.012	0.056
34	2.83	0.17	0.068	(0.107)	0.012	0.056
35	2.92	0.17	0.068	(0.106)	0.012	0.056
36	3.00	0.17	0.068	(0.106)	0.012	0.056
37	3.08	0.17	0.068	(0.106)	0.012	0.056
38	3.17	0.17	0.068	(0.105)	0.012	0.056
39	3.25	0.17	0.068	(0.105)	0.012	0.056
40	3.33	0.17	0.068	(0.104)	0.012	0.056
41	3.42	0.17	0.068	(0.104)	0.012	0.056
42	3.50	0.17	0.068	(0.103)	0.012	0.056
43	3.58	0.17	0.068	(0.103)	0.012	0.056
44	3.67	0.17	0.068	(0.102)	0.012	0.056
45	3.75	0.17	0.068	(0.102)	0.012	0.056
46	3.83	0.20	0.081	(0.102)	0.015	0.067
47	3.92	0.20	0.081	(0.101)	0.015	0.067
48	4.00	0.20	0.081	(0.101)	0.015	0.067
49	4.08	0.20	0.081	(0.100)	0.015	0.067
50	4.17	0.20	0.081	(0.100)	0.015	0.067
51	4.25	0.20	0.081	(0.099)	0.015	0.067
52	4.33	0.23	0.095	(0.099)	0.017	0.078
53	4.42	0.23	0.095	(0.099)	0.017	0.078
54	4.50	0.23	0.095	(0.098)	0.017	0.078
55	4.58	0.23	0.095	(0.098)	0.017	0.078
56	4.67	0.23	0.095	(0.097)	0.017	0.078
57	4.75	0.23	0.095	(0.097)	0.017	0.078
58	4.83	0.27	0.109	(0.097)	0.020	0.089
59	4.92	0.27	0.109	(0.096)	0.020	0.089
60	5.00	0.27	0.109	(0.096)	0.020	0.089
61	5.08	0.20	0.081	(0.095)	0.015	0.067
62	5.17	0.20	0.081	(0.095)	0.015	0.067
63	5.25	0.20	0.081	(0.094)	0.015	0.067
64	5.33	0.23	0.095	(0.094)	0.017	0.078
65	5.42	0.23	0.095	(0.094)	0.017	0.078
66	5.50	0.23	0.095	(0.093)	0.017	0.078
67	5.58	0.27	0.109	(0.093)	0.020	0.089
68	5.67	0.27	0.109	(0.092)	0.020	0.089
69	5.75	0.27	0.109	(0.092)	0.020	0.089
70	5.83	0.27	0.109	(0.092)	0.020	0.089
71	5.92	0.27	0.109	(0.091)	0.020	0.089
72	6.00	0.27	0.109	(0.091)	0.020	0.089
73	6.08	0.30	0.122	(0.090)	0.022	0.100
74	6.17	0.30	0.122	(0.090)	0.022	0.100
75	6.25	0.30	0.122	(0.090)	0.022	0.100
76	6.33	0.30	0.122	(0.089)	0.022	0.100

77	6.42	0.30	0.122	(0.089)	0.022	0.100
78	6.50	0.30	0.122	(0.088)	0.022	0.100
79	6.58	0.33	0.136	(0.088)	0.024	0.111
80	6.67	0.33	0.136	(0.088)	0.024	0.111
81	6.75	0.33	0.136	(0.087)	0.024	0.111
82	6.83	0.33	0.136	(0.087)	0.024	0.111
83	6.92	0.33	0.136	(0.086)	0.024	0.111
84	7.00	0.33	0.136	(0.086)	0.024	0.111
85	7.08	0.33	0.136	(0.086)	0.024	0.111
86	7.17	0.33	0.136	(0.085)	0.024	0.111
87	7.25	0.33	0.136	(0.085)	0.024	0.111
88	7.33	0.37	0.149	(0.084)	0.027	0.123
89	7.42	0.37	0.149	(0.084)	0.027	0.123
90	7.50	0.37	0.149	(0.084)	0.027	0.123
91	7.58	0.40	0.163	(0.083)	0.029	0.134
92	7.67	0.40	0.163	(0.083)	0.029	0.134
93	7.75	0.40	0.163	(0.083)	0.029	0.134
94	7.83	0.43	0.177	(0.082)	0.032	0.145
95	7.92	0.43	0.177	(0.082)	0.032	0.145
96	8.00	0.43	0.177	(0.081)	0.032	0.145
97	8.08	0.50	0.204	(0.081)	0.037	0.167
98	8.17	0.50	0.204	(0.081)	0.037	0.167
99	8.25	0.50	0.204	(0.080)	0.037	0.167
100	8.33	0.50	0.204	(0.080)	0.037	0.167
101	8.42	0.50	0.204	(0.080)	0.037	0.167
102	8.50	0.50	0.204	(0.079)	0.037	0.167
103	8.58	0.53	0.217	(0.079)	0.039	0.178
104	8.67	0.53	0.217	(0.078)	0.039	0.178
105	8.75	0.53	0.217	(0.078)	0.039	0.178
106	8.83	0.57	0.231	(0.078)	0.042	0.189
107	8.92	0.57	0.231	(0.077)	0.042	0.189
108	9.00	0.57	0.231	(0.077)	0.042	0.189
109	9.08	0.63	0.258	(0.077)	0.046	0.212
110	9.17	0.63	0.258	(0.076)	0.046	0.212
111	9.25	0.63	0.258	(0.076)	0.046	0.212
112	9.33	0.67	0.272	(0.075)	0.049	0.223
113	9.42	0.67	0.272	(0.075)	0.049	0.223
114	9.50	0.67	0.272	(0.075)	0.049	0.223
115	9.58	0.70	0.285	(0.074)	0.051	0.234
116	9.67	0.70	0.285	(0.074)	0.051	0.234
117	9.75	0.70	0.285	(0.074)	0.051	0.234
118	9.83	0.73	0.299	(0.073)	0.054	0.245
119	9.92	0.73	0.299	(0.073)	0.054	0.245
120	10.00	0.73	0.299	(0.073)	0.054	0.245
121	10.08	0.50	0.204	(0.072)	0.037	0.167
122	10.17	0.50	0.204	(0.072)	0.037	0.167
123	10.25	0.50	0.204	(0.072)	0.037	0.167
124	10.33	0.50	0.204	(0.071)	0.037	0.167
125	10.42	0.50	0.204	(0.071)	0.037	0.167
126	10.50	0.50	0.204	(0.071)	0.037	0.167
127	10.58	0.67	0.272	(0.070)	0.049	0.223
128	10.67	0.67	0.272	(0.070)	0.049	0.223
129	10.75	0.67	0.272	(0.070)	0.049	0.223
130	10.83	0.67	0.272	(0.069)	0.049	0.223
131	10.92	0.67	0.272	(0.069)	0.049	0.223
132	11.00	0.67	0.272	(0.068)	0.049	0.223
133	11.08	0.63	0.258	(0.068)	0.046	0.212
134	11.17	0.63	0.258	(0.068)	0.046	0.212
135	11.25	0.63	0.258	(0.067)	0.046	0.212
136	11.33	0.63	0.258	(0.067)	0.046	0.212

137	11.42	0.63	0.258	(0.067)	0.046	0.212
138	11.50	0.63	0.258	(0.066)	0.046	0.212
139	11.58	0.57	0.231	(0.066)	0.042	0.189
140	11.67	0.57	0.231	(0.066)	0.042	0.189
141	11.75	0.57	0.231	(0.066)	0.042	0.189
142	11.83	0.60	0.244	(0.065)	0.044	0.200
143	11.92	0.60	0.244	(0.065)	0.044	0.200
144	12.00	0.60	0.244	(0.065)	0.044	0.200
145	12.08	0.83	0.340	(0.064)	0.061	0.278
146	12.17	0.83	0.340	(0.064)	0.061	0.278
147	12.25	0.83	0.340	(0.064)	0.061	0.278
148	12.33	0.87	0.353	0.063	(0.064)	0.290
149	12.42	0.87	0.353	0.063	(0.064)	0.290
150	12.50	0.87	0.353	0.063	(0.064)	0.290
151	12.58	0.93	0.380	0.062	(0.068)	0.318
152	12.67	0.93	0.380	0.062	(0.068)	0.318
153	12.75	0.93	0.380	0.062	(0.068)	0.319
154	12.83	0.97	0.394	0.061	(0.071)	0.332
155	12.92	0.97	0.394	0.061	(0.071)	0.333
156	13.00	0.97	0.394	0.061	(0.071)	0.333
157	13.08	1.13	0.462	0.060	(0.083)	0.401
158	13.17	1.13	0.462	0.060	(0.083)	0.402
159	13.25	1.13	0.462	0.060	(0.083)	0.402
160	13.33	1.13	0.462	0.060	(0.083)	0.402
161	13.42	1.13	0.462	0.059	(0.083)	0.403
162	13.50	1.13	0.462	0.059	(0.083)	0.403
163	13.58	0.77	0.312	(0.059)	0.056	0.256
164	13.67	0.77	0.312	(0.058)	0.056	0.256
165	13.75	0.77	0.312	(0.058)	0.056	0.256
166	13.83	0.77	0.312	(0.058)	0.056	0.256
167	13.92	0.77	0.312	(0.057)	0.056	0.256
168	14.00	0.77	0.312	(0.057)	0.056	0.256
169	14.08	0.90	0.367	0.057	(0.066)	0.310
170	14.17	0.90	0.367	0.057	(0.066)	0.310
171	14.25	0.90	0.367	0.056	(0.066)	0.310
172	14.33	0.87	0.353	0.056	(0.064)	0.297
173	14.42	0.87	0.353	0.056	(0.064)	0.297
174	14.50	0.87	0.353	0.055	(0.064)	0.298
175	14.58	0.87	0.353	0.055	(0.064)	0.298
176	14.67	0.87	0.353	0.055	(0.064)	0.298
177	14.75	0.87	0.353	0.055	(0.064)	0.299
178	14.83	0.83	0.340	0.054	(0.061)	0.285
179	14.92	0.83	0.340	0.054	(0.061)	0.286
180	15.00	0.83	0.340	0.054	(0.061)	0.286
181	15.08	0.80	0.326	0.053	(0.059)	0.273
182	15.17	0.80	0.326	0.053	(0.059)	0.273
183	15.25	0.80	0.326	0.053	(0.059)	0.273
184	15.33	0.77	0.312	0.053	(0.056)	0.260
185	15.42	0.77	0.312	0.052	(0.056)	0.260
186	15.50	0.77	0.312	0.052	(0.056)	0.260
187	15.58	0.63	0.258	(0.052)	0.046	0.212
188	15.67	0.63	0.258	(0.052)	0.046	0.212
189	15.75	0.63	0.258	(0.051)	0.046	0.212
190	15.83	0.63	0.258	(0.051)	0.046	0.212
191	15.92	0.63	0.258	(0.051)	0.046	0.212
192	16.00	0.63	0.258	(0.051)	0.046	0.212
193	16.08	0.13	0.054	(0.050)	0.010	0.045
194	16.17	0.13	0.054	(0.050)	0.010	0.045
195	16.25	0.13	0.054	(0.050)	0.010	0.045
196	16.33	0.13	0.054	(0.049)	0.010	0.045

197	16.42	0.13	0.054	(0.049)	0.010	0.045
198	16.50	0.13	0.054	(0.049)	0.010	0.045
199	16.58	0.10	0.041	(0.049)	0.007	0.033
200	16.67	0.10	0.041	(0.048)	0.007	0.033
201	16.75	0.10	0.041	(0.048)	0.007	0.033
202	16.83	0.10	0.041	(0.048)	0.007	0.033
203	16.92	0.10	0.041	(0.048)	0.007	0.033
204	17.00	0.10	0.041	(0.048)	0.007	0.033
205	17.08	0.17	0.068	(0.047)	0.012	0.056
206	17.17	0.17	0.068	(0.047)	0.012	0.056
207	17.25	0.17	0.068	(0.047)	0.012	0.056
208	17.33	0.17	0.068	(0.047)	0.012	0.056
209	17.42	0.17	0.068	(0.046)	0.012	0.056
210	17.50	0.17	0.068	(0.046)	0.012	0.056
211	17.58	0.17	0.068	(0.046)	0.012	0.056
212	17.67	0.17	0.068	(0.046)	0.012	0.056
213	17.75	0.17	0.068	(0.045)	0.012	0.056
214	17.83	0.13	0.054	(0.045)	0.010	0.045
215	17.92	0.13	0.054	(0.045)	0.010	0.045
216	18.00	0.13	0.054	(0.045)	0.010	0.045
217	18.08	0.13	0.054	(0.045)	0.010	0.045
218	18.17	0.13	0.054	(0.044)	0.010	0.045
219	18.25	0.13	0.054	(0.044)	0.010	0.045
220	18.33	0.13	0.054	(0.044)	0.010	0.045
221	18.42	0.13	0.054	(0.044)	0.010	0.045
222	18.50	0.13	0.054	(0.043)	0.010	0.045
223	18.58	0.10	0.041	(0.043)	0.007	0.033
224	18.67	0.10	0.041	(0.043)	0.007	0.033
225	18.75	0.10	0.041	(0.043)	0.007	0.033
226	18.83	0.07	0.027	(0.043)	0.005	0.022
227	18.92	0.07	0.027	(0.042)	0.005	0.022
228	19.00	0.07	0.027	(0.042)	0.005	0.022
229	19.08	0.10	0.041	(0.042)	0.007	0.033
230	19.17	0.10	0.041	(0.042)	0.007	0.033
231	19.25	0.10	0.041	(0.042)	0.007	0.033
232	19.33	0.13	0.054	(0.041)	0.010	0.045
233	19.42	0.13	0.054	(0.041)	0.010	0.045
234	19.50	0.13	0.054	(0.041)	0.010	0.045
235	19.58	0.10	0.041	(0.041)	0.007	0.033
236	19.67	0.10	0.041	(0.041)	0.007	0.033
237	19.75	0.10	0.041	(0.040)	0.007	0.033
238	19.83	0.07	0.027	(0.040)	0.005	0.022
239	19.92	0.07	0.027	(0.040)	0.005	0.022
240	20.00	0.07	0.027	(0.040)	0.005	0.022
241	20.08	0.10	0.041	(0.040)	0.007	0.033
242	20.17	0.10	0.041	(0.040)	0.007	0.033
243	20.25	0.10	0.041	(0.039)	0.007	0.033
244	20.33	0.10	0.041	(0.039)	0.007	0.033
245	20.42	0.10	0.041	(0.039)	0.007	0.033
246	20.50	0.10	0.041	(0.039)	0.007	0.033
247	20.58	0.10	0.041	(0.039)	0.007	0.033
248	20.67	0.10	0.041	(0.039)	0.007	0.033
249	20.75	0.10	0.041	(0.038)	0.007	0.033
250	20.83	0.07	0.027	(0.038)	0.005	0.022
251	20.92	0.07	0.027	(0.038)	0.005	0.022
252	21.00	0.07	0.027	(0.038)	0.005	0.022
253	21.08	0.10	0.041	(0.038)	0.007	0.033
254	21.17	0.10	0.041	(0.038)	0.007	0.033
255	21.25	0.10	0.041	(0.038)	0.007	0.033
256	21.33	0.07	0.027	(0.037)	0.005	0.022

257	21.42	0.07	0.027	(0.037)	0.005	0.022
258	21.50	0.07	0.027	(0.037)	0.005	0.022
259	21.58	0.10	0.041	(0.037)	0.007	0.033
260	21.67	0.10	0.041	(0.037)	0.007	0.033
261	21.75	0.10	0.041	(0.037)	0.007	0.033
262	21.83	0.07	0.027	(0.037)	0.005	0.022
263	21.92	0.07	0.027	(0.036)	0.005	0.022
264	22.00	0.07	0.027	(0.036)	0.005	0.022
265	22.08	0.10	0.041	(0.036)	0.007	0.033
266	22.17	0.10	0.041	(0.036)	0.007	0.033
267	22.25	0.10	0.041	(0.036)	0.007	0.033
268	22.33	0.07	0.027	(0.036)	0.005	0.022
269	22.42	0.07	0.027	(0.036)	0.005	0.022
270	22.50	0.07	0.027	(0.036)	0.005	0.022
271	22.58	0.07	0.027	(0.036)	0.005	0.022
272	22.67	0.07	0.027	(0.035)	0.005	0.022
273	22.75	0.07	0.027	(0.035)	0.005	0.022
274	22.83	0.07	0.027	(0.035)	0.005	0.022
275	22.92	0.07	0.027	(0.035)	0.005	0.022
276	23.00	0.07	0.027	(0.035)	0.005	0.022
277	23.08	0.07	0.027	(0.035)	0.005	0.022
278	23.17	0.07	0.027	(0.035)	0.005	0.022
279	23.25	0.07	0.027	(0.035)	0.005	0.022
280	23.33	0.07	0.027	(0.035)	0.005	0.022
281	23.42	0.07	0.027	(0.035)	0.005	0.022
282	23.50	0.07	0.027	(0.035)	0.005	0.022
283	23.58	0.07	0.027	(0.035)	0.005	0.022
284	23.67	0.07	0.027	(0.035)	0.005	0.022
285	23.75	0.07	0.027	(0.034)	0.005	0.022
286	23.83	0.07	0.027	(0.034)	0.005	0.022
287	23.92	0.07	0.027	(0.034)	0.005	0.022
288	24.00	0.07	0.027	(0.034)	0.005	0.022

(Loss Rate Not Used)

Sum = 100.0 Sum = 33.7

Flood volume = Effective rainfall 2.81(In)
times area 6.8(Ac.)/[(In)/(Ft.)] = 1.6(Ac.Ft)
Total soil loss = 0.58(In)
Total soil loss = 0.331(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 69277.5 Cubic Feet
Total soil loss = 14407.9 Cubic Feet

Peak flow rate of this hydrograph = 2.734(CFS)

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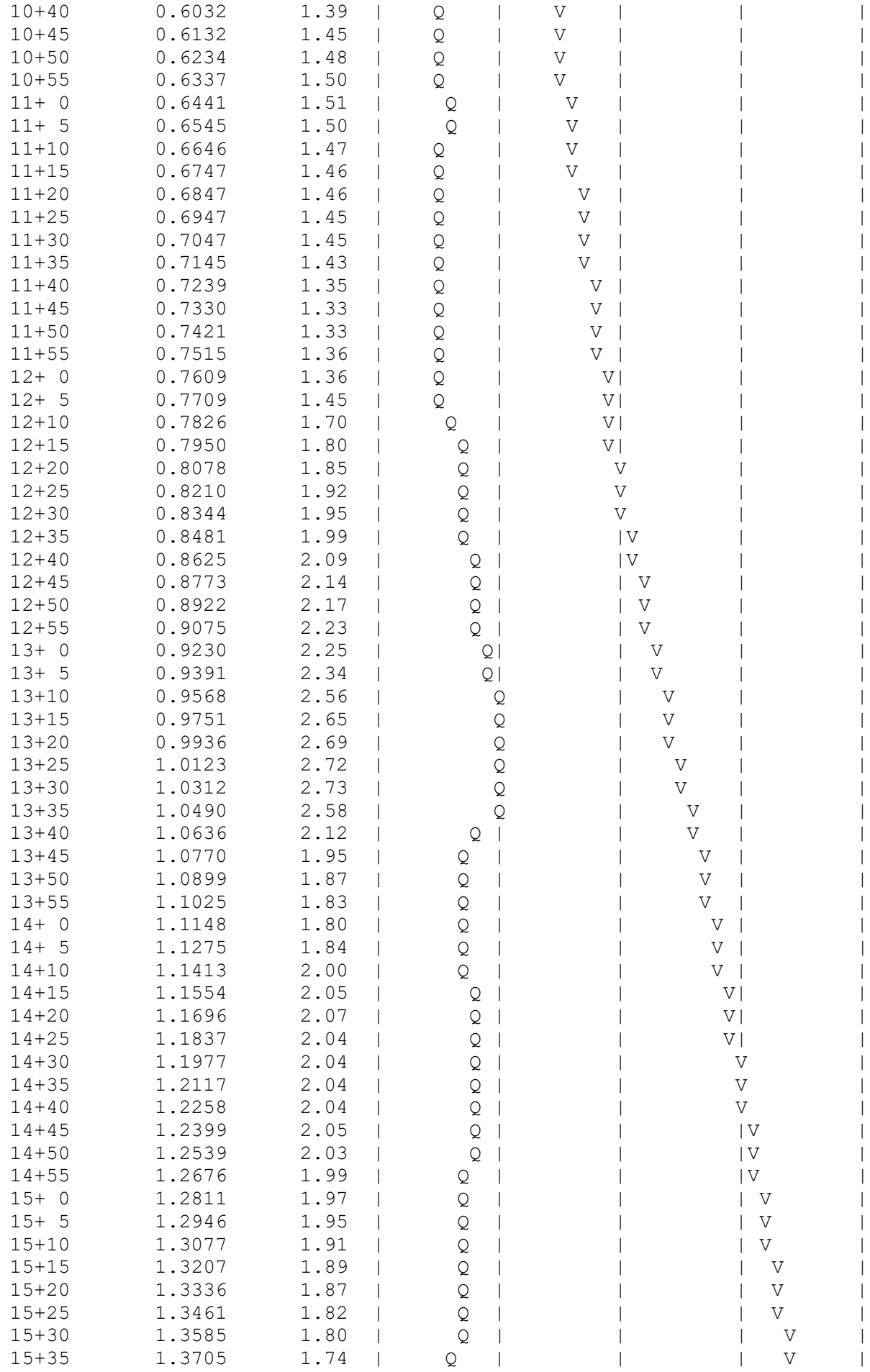
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0002	0.02	Q	|	|	|	|
0+10	0.0008	0.10	Q	|	|	|	|
0+15	0.0017	0.12	Q	|	|	|	|
0+20	0.0027	0.15	Q	|	|	|	|
0+25	0.0040	0.19	Q	|	|	|	|
0+30	0.0054	0.21	Q	|	|	|	|
0+35	0.0069	0.22	Q	|	|	|	|

0+40	0.0084	0.22	Q	|	|	|	|
0+45	0.0100	0.23	Q	|	|	|	|
0+50	0.0116	0.24	Q	|	|	|	|
0+55	0.0135	0.28	VQ	|	|	|	|
1+ 0	0.0155	0.29	VQ	|	|	|	|
1+ 5	0.0175	0.28	VQ	|	|	|	|
1+10	0.0192	0.25	VQ	|	|	|	|
1+15	0.0209	0.24	Q	|	|	|	|
1+20	0.0225	0.24	Q	|	|	|	|
1+25	0.0241	0.23	Q	|	|	|	|
1+30	0.0257	0.23	Q	|	|	|	|
1+35	0.0273	0.23	Q	|	|	|	|
1+40	0.0289	0.23	Q	|	|	|	|
1+45	0.0304	0.23	Q	|	|	|	|
1+50	0.0321	0.24	Q	|	|	|	|
1+55	0.0340	0.28	VQ	|	|	|	|
2+ 0	0.0360	0.29	VQ	|	|	|	|
2+ 5	0.0380	0.30	VQ	|	|	|	|
2+10	0.0401	0.30	|Q	|	|	|	|
2+15	0.0422	0.30	|Q	|	|	|	|
2+20	0.0443	0.30	|Q	|	|	|	|
2+25	0.0464	0.30	|Q	|	|	|	|
2+30	0.0485	0.30	|Q	|	|	|	|
2+35	0.0506	0.32	|Q	|	|	|	|
2+40	0.0531	0.35	|Q	|	|	|	|
2+45	0.0556	0.37	|Q	|	|	|	|
2+50	0.0582	0.37	|Q	|	|	|	|
2+55	0.0607	0.38	|Q	|	|	|	|
3+ 0	0.0633	0.38	|Q	|	|	|	|
3+ 5	0.0660	0.38	|Q	|	|	|	|
3+10	0.0686	0.38	|Q	|	|	|	|
3+15	0.0712	0.38	|Q	|	|	|	|
3+20	0.0738	0.38	|Q	|	|	|	|
3+25	0.0765	0.38	|Q	|	|	|	|
3+30	0.0791	0.38	|Q	|	|	|	|
3+35	0.0817	0.38	|QV	|	|	|	|
3+40	0.0843	0.38	|QV	|	|	|	|
3+45	0.0870	0.38	|QV	|	|	|	|
3+50	0.0897	0.39	|QV	|	|	|	|
3+55	0.0926	0.43	|QV	|	|	|	|
4+ 0	0.0957	0.44	|QV	|	|	|	|
4+ 5	0.0988	0.45	|QV	|	|	|	|
4+10	0.1019	0.45	|QV	|	|	|	|
4+15	0.1050	0.45	|QV	|	|	|	|
4+20	0.1082	0.47	|QV	|	|	|	|
4+25	0.1117	0.50	| Q	|	|	|	|
4+30	0.1153	0.52	| Q	|	|	|	|
4+35	0.1189	0.52	| Q	|	|	|	|
4+40	0.1225	0.53	| QV	|	|	|	|
4+45	0.1262	0.53	| QV	|	|	|	|
4+50	0.1299	0.54	| QV	|	|	|	|
4+55	0.1339	0.58	| QV	|	|	|	|
5+ 0	0.1380	0.60	| QV	|	|	|	|
5+ 5	0.1420	0.58	| QV	|	|	|	|
5+10	0.1455	0.51	| QV	|	|	|	|
5+15	0.1488	0.48	|Q V	|	|	|	|
5+20	0.1522	0.49	|Q V	|	|	|	|
5+25	0.1557	0.52	| QV	|	|	|	|
5+30	0.1593	0.53	| Q V	|	|	|	|
5+35	0.1631	0.54	| Q V	|	|	|	|

5+40	0.1670	0.58	Q V				
5+45	0.1711	0.59	Q V				
5+50	0.1752	0.60	Q V				
5+55	0.1794	0.60	Q V				
6+ 0	0.1836	0.61	Q V				
6+ 5	0.1879	0.62	Q V				
6+10	0.1924	0.66	Q V				
6+15	0.1970	0.67	Q V				
6+20	0.2017	0.68	Q V				
6+25	0.2064	0.68	Q V				
6+30	0.2111	0.68	Q V				
6+35	0.2158	0.70	Q V				
6+40	0.2209	0.73	Q V				
6+45	0.2260	0.75	Q V				
6+50	0.2312	0.75	Q V				
6+55	0.2364	0.76	Q V				
7+ 0	0.2417	0.76	Q V				
7+ 5	0.2469	0.76	Q V				
7+10	0.2522	0.76	Q V				
7+15	0.2574	0.76	Q V				
7+20	0.2627	0.77	Q V				
7+25	0.2683	0.81	Q V				
7+30	0.2740	0.82	Q V				
7+35	0.2798	0.84	Q V				
7+40	0.2859	0.88	Q V				
7+45	0.2920	0.90	Q V				
7+50	0.2984	0.92	Q V				
7+55	0.3049	0.96	Q V				
8+ 0	0.3116	0.97	Q V				
8+ 5	0.3186	1.00	Q V				
8+10	0.3260	1.08	Q V				
8+15	0.3337	1.11	Q V				
8+20	0.3414	1.12	Q V				
8+25	0.3492	1.13	Q V				
8+30	0.3570	1.14	Q V				
8+35	0.3649	1.15	Q V				
8+40	0.3731	1.19	Q V				
8+45	0.3814	1.21	Q V				
8+50	0.3899	1.22	Q V				
8+55	0.3986	1.26	Q V				
9+ 0	0.4074	1.28	Q V				
9+ 5	0.4164	1.31	Q V				
9+10	0.4259	1.39	Q V				
9+15	0.4357	1.42	Q V				
9+20	0.4456	1.44	Q V				
9+25	0.4558	1.48	Q V				
9+30	0.4662	1.50	Q V				
9+35	0.4767	1.52	Q V				
9+40	0.4874	1.57	Q V				
9+45	0.4984	1.58	Q V				
9+50	0.5094	1.60	Q V				
9+55	0.5207	1.64	Q V				
10+ 0	0.5321	1.66	Q V				
10+ 5	0.5430	1.58	Q V				
10+10	0.5522	1.33	Q V				
10+15	0.5608	1.24	Q V				
10+20	0.5691	1.20	Q V				
10+25	0.5772	1.18	Q V				
10+30	0.5853	1.17	Q V				
10+35	0.5936	1.22	Q V				



15+40	1.3814	1.58	| Q	|	|	| V	|
15+45	1.3918	1.52	| Q	|	|	| V	|
15+50	1.4021	1.49	| Q	|	|	| V	|
15+55	1.4122	1.47	| Q	|	|	| V	|
16+ 0	1.4223	1.46	| Q	|	|	| V	|
16+ 5	1.4311	1.27	| Q	|	|	| V	|
16+10	1.4361	0.73	| Q	|	|	| V	|
16+15	1.4398	0.53	| Q	|	|	| V	|
16+20	1.4428	0.44	|Q	|	|	| V	|
16+25	1.4455	0.39	|Q	|	|	| V	|
16+30	1.4479	0.36	|Q	|	|	| V	|
16+35	1.4501	0.32	|Q	|	|	| V	|
16+40	1.4520	0.27	|Q	|	|	| V	|
16+45	1.4537	0.24	Q	|	|	| V	|
16+50	1.4553	0.24	Q	|	|	| V	|
16+55	1.4569	0.23	Q	|	|	| V	|
17+ 0	1.4585	0.23	Q	|	|	| V	|
17+ 5	1.4603	0.26	|Q	|	|	| V	|
17+10	1.4625	0.33	|Q	|	|	| V	|
17+15	1.4650	0.35	|Q	|	|	| V	|
17+20	1.4675	0.36	|Q	|	|	| V	|
17+25	1.4700	0.37	|Q	|	|	| V	|
17+30	1.4726	0.37	|Q	|	|	| V	|
17+35	1.4752	0.38	|Q	|	|	| V	|
17+40	1.4778	0.38	|Q	|	|	| V	|
17+45	1.4804	0.38	|Q	|	|	| V	|
17+50	1.4830	0.37	|Q	|	|	| V	|
17+55	1.4853	0.33	|Q	|	|	| V	|
18+ 0	1.4875	0.32	|Q	|	|	| V	|
18+ 5	1.4896	0.31	|Q	|	|	| V	|
18+10	1.4918	0.31	|Q	|	|	| V	|
18+15	1.4939	0.31	|Q	|	|	| V	|
18+20	1.4960	0.31	|Q	|	|	| V	|
18+25	1.4981	0.31	|Q	|	|	| V	|
18+30	1.5002	0.30	|Q	|	|	| V	|
18+35	1.5022	0.29	|Q	|	|	| V	|
18+40	1.5040	0.26	|Q	|	|	| V	|
18+45	1.5057	0.24	Q	|	|	| V	|
18+50	1.5072	0.23	Q	|	|	| V	|
18+55	1.5085	0.19	Q	|	|	| V	|
19+ 0	1.5097	0.17	Q	|	|	| V	|
19+ 5	1.5109	0.18	Q	|	|	| V	|
19+10	1.5123	0.21	Q	|	|	| V	|
19+15	1.5138	0.22	Q	|	|	| V	|
19+20	1.5154	0.23	Q	|	|	| V	|
19+25	1.5173	0.27	|Q	|	|	| V	|
19+30	1.5193	0.29	|Q	|	|	| V	|
19+35	1.5212	0.28	|Q	|	|	| V	|
19+40	1.5230	0.25	|Q	|	|	| V	|
19+45	1.5246	0.24	Q	|	|	| V	|
19+50	1.5261	0.22	Q	|	|	| V	|
19+55	1.5274	0.19	Q	|	|	| V	|
20+ 0	1.5286	0.17	Q	|	|	| V	|
20+ 5	1.5298	0.18	Q	|	|	| V	|
20+10	1.5312	0.21	Q	|	|	| V	|
20+15	1.5327	0.22	Q	|	|	| V	|
20+20	1.5343	0.22	Q	|	|	| V	|
20+25	1.5358	0.22	Q	|	|	| V	|
20+30	1.5374	0.23	Q	|	|	| V	|
20+35	1.5389	0.23	Q	|	|	| V	|

20+40	1.5405	0.23	Q	|	|	|	V |
20+45	1.5421	0.23	Q	|	|	|	V |
20+50	1.5436	0.22	Q	|	|	|	V |
20+55	1.5448	0.18	Q	|	|	|	V |
21+ 0	1.5459	0.17	Q	|	|	|	V |
21+ 5	1.5471	0.17	Q	|	|	|	V |
21+10	1.5486	0.21	Q	|	|	|	V |
21+15	1.5501	0.22	Q	|	|	|	V |
21+20	1.5515	0.21	Q	|	|	|	V|
21+25	1.5527	0.18	Q	|	|	|	V|
21+30	1.5538	0.16	Q	|	|	|	V|
21+35	1.5550	0.17	Q	|	|	|	V|
21+40	1.5564	0.21	Q	|	|	|	V|
21+45	1.5579	0.22	Q	|	|	|	V|
21+50	1.5594	0.21	Q	|	|	|	V|
21+55	1.5606	0.18	Q	|	|	|	V|
22+ 0	1.5617	0.16	Q	|	|	|	V|
22+ 5	1.5629	0.17	Q	|	|	|	V|
22+10	1.5643	0.21	Q	|	|	|	V|
22+15	1.5658	0.22	Q	|	|	|	V|
22+20	1.5673	0.21	Q	|	|	|	V|
22+25	1.5685	0.18	Q	|	|	|	V|
22+30	1.5696	0.16	Q	|	|	|	V|
22+35	1.5707	0.16	Q	|	|	|	V|
22+40	1.5718	0.16	Q	|	|	|	V|
22+45	1.5729	0.16	Q	|	|	|	V|
22+50	1.5739	0.15	Q	|	|	|	V|
22+55	1.5750	0.15	Q	|	|	|	V|
23+ 0	1.5760	0.15	Q	|	|	|	V|
23+ 5	1.5771	0.15	Q	|	|	|	V|
23+10	1.5781	0.15	Q	|	|	|	V|
23+15	1.5792	0.15	Q	|	|	|	V|
23+20	1.5802	0.15	Q	|	|	|	V|
23+25	1.5813	0.15	Q	|	|	|	V|
23+30	1.5823	0.15	Q	|	|	|	V|
23+35	1.5834	0.15	Q	|	|	|	V|
23+40	1.5844	0.15	Q	|	|	|	V|
23+45	1.5855	0.15	Q	|	|	|	V|
23+50	1.5865	0.15	Q	|	|	|	V|
23+55	1.5876	0.15	Q	|	|	|	V|
24+ 0	1.5886	0.15	Q	|	|	|	V|
24+ 5	1.5895	0.13	Q	|	|	|	V|
24+10	1.5899	0.06	Q	|	|	|	V|
24+15	1.5901	0.03	Q	|	|	|	V|
24+20	1.5902	0.02	Q	|	|	|	V|
24+25	1.5903	0.01	Q	|	|	|	V|
24+30	1.5904	0.01	Q	|	|	|	V|
24+35	1.5904	0.00	Q	|	|	|	V|
24+40	1.5904	0.00	Q	|	|	|	V|

APPENDIX D.2

2-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

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 10/18/23 File: 2242.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0013 EVANS ROAD (MENIFEE INDUSTRIAL 3)
2-YEAR, 24-HOUR STORM EVENT
POST DEVELOPMENT
2023.10.18

Drainage Area = 6.79(Ac.) = 0.011 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 6.79(Ac.) = 0.011 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.093 Hr.
Lag time = 5.59 Min.
25% of lag time = 1.40 Min.
40% of lag time = 2.24 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]
6.79	2.05	13.92

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
6.79	5.32	36.12

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.050(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 2.050(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.050(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
6.790	70.00	0.900

Total Area Entered = 6.79(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
70.0	51.0	0.562	0.900	0.107	1.000	0.107
					Sum (F) =	0.107

Area averaged mean soil loss (F) (In/Hr) = 0.107
Minimum soil loss rate ((In/Hr)) = 0.053
(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 (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	89.413	16.005	1.095
2	0.167	178.827	46.971	3.214
3	0.250	268.240	17.546	1.201
4	0.333	357.654	7.677	0.525
5	0.417	447.067	4.455	0.305
6	0.500	536.481	2.838	0.194
7	0.583	625.894	1.949	0.133
8	0.667	715.308	1.251	0.086
9	0.750	804.721	1.307	0.089
		Sum =	100.000 Sum=	6.843

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.189)		0.003	0.013
2	0.17	0.07	0.016	(0.188)		0.003	0.013
3	0.25	0.07	0.016	(0.188)		0.003	0.013
4	0.33	0.10	0.025	(0.187)		0.004	0.020
5	0.42	0.10	0.025	(0.186)		0.004	0.020
6	0.50	0.10	0.025	(0.186)		0.004	0.020
7	0.58	0.10	0.025	(0.185)		0.004	0.020
8	0.67	0.10	0.025	(0.184)		0.004	0.020
9	0.75	0.10	0.025	(0.183)		0.004	0.020
10	0.83	0.13	0.033	(0.183)		0.006	0.027
11	0.92	0.13	0.033	(0.182)		0.006	0.027
12	1.00	0.13	0.033	(0.181)		0.006	0.027
13	1.08	0.10	0.025	(0.181)		0.004	0.020
14	1.17	0.10	0.025	(0.180)		0.004	0.020
15	1.25	0.10	0.025	(0.179)		0.004	0.020
16	1.33	0.10	0.025	(0.178)		0.004	0.020

17	1.42	0.10	0.025	(0.178)	0.004	0.020
18	1.50	0.10	0.025	(0.177)	0.004	0.020
19	1.58	0.10	0.025	(0.176)	0.004	0.020
20	1.67	0.10	0.025	(0.176)	0.004	0.020
21	1.75	0.10	0.025	(0.175)	0.004	0.020
22	1.83	0.13	0.033	(0.174)	0.006	0.027
23	1.92	0.13	0.033	(0.173)	0.006	0.027
24	2.00	0.13	0.033	(0.173)	0.006	0.027
25	2.08	0.13	0.033	(0.172)	0.006	0.027
26	2.17	0.13	0.033	(0.171)	0.006	0.027
27	2.25	0.13	0.033	(0.171)	0.006	0.027
28	2.33	0.13	0.033	(0.170)	0.006	0.027
29	2.42	0.13	0.033	(0.169)	0.006	0.027
30	2.50	0.13	0.033	(0.169)	0.006	0.027
31	2.58	0.17	0.041	(0.168)	0.007	0.034
32	2.67	0.17	0.041	(0.167)	0.007	0.034
33	2.75	0.17	0.041	(0.167)	0.007	0.034
34	2.83	0.17	0.041	(0.166)	0.007	0.034
35	2.92	0.17	0.041	(0.165)	0.007	0.034
36	3.00	0.17	0.041	(0.164)	0.007	0.034
37	3.08	0.17	0.041	(0.164)	0.007	0.034
38	3.17	0.17	0.041	(0.163)	0.007	0.034
39	3.25	0.17	0.041	(0.162)	0.007	0.034
40	3.33	0.17	0.041	(0.162)	0.007	0.034
41	3.42	0.17	0.041	(0.161)	0.007	0.034
42	3.50	0.17	0.041	(0.160)	0.007	0.034
43	3.58	0.17	0.041	(0.160)	0.007	0.034
44	3.67	0.17	0.041	(0.159)	0.007	0.034
45	3.75	0.17	0.041	(0.158)	0.007	0.034
46	3.83	0.20	0.049	(0.158)	0.009	0.040
47	3.92	0.20	0.049	(0.157)	0.009	0.040
48	4.00	0.20	0.049	(0.156)	0.009	0.040
49	4.08	0.20	0.049	(0.156)	0.009	0.040
50	4.17	0.20	0.049	(0.155)	0.009	0.040
51	4.25	0.20	0.049	(0.154)	0.009	0.040
52	4.33	0.23	0.057	(0.154)	0.010	0.047
53	4.42	0.23	0.057	(0.153)	0.010	0.047
54	4.50	0.23	0.057	(0.152)	0.010	0.047
55	4.58	0.23	0.057	(0.152)	0.010	0.047
56	4.67	0.23	0.057	(0.151)	0.010	0.047
57	4.75	0.23	0.057	(0.150)	0.010	0.047
58	4.83	0.27	0.066	(0.150)	0.012	0.054
59	4.92	0.27	0.066	(0.149)	0.012	0.054
60	5.00	0.27	0.066	(0.149)	0.012	0.054
61	5.08	0.20	0.049	(0.148)	0.009	0.040
62	5.17	0.20	0.049	(0.147)	0.009	0.040
63	5.25	0.20	0.049	(0.147)	0.009	0.040
64	5.33	0.23	0.057	(0.146)	0.010	0.047
65	5.42	0.23	0.057	(0.145)	0.010	0.047
66	5.50	0.23	0.057	(0.145)	0.010	0.047
67	5.58	0.27	0.066	(0.144)	0.012	0.054
68	5.67	0.27	0.066	(0.143)	0.012	0.054
69	5.75	0.27	0.066	(0.143)	0.012	0.054
70	5.83	0.27	0.066	(0.142)	0.012	0.054
71	5.92	0.27	0.066	(0.142)	0.012	0.054
72	6.00	0.27	0.066	(0.141)	0.012	0.054
73	6.08	0.30	0.074	(0.140)	0.013	0.061
74	6.17	0.30	0.074	(0.140)	0.013	0.061
75	6.25	0.30	0.074	(0.139)	0.013	0.061
76	6.33	0.30	0.074	(0.138)	0.013	0.061

77	6.42	0.30	0.074	(0.138)	0.013	0.061
78	6.50	0.30	0.074	(0.137)	0.013	0.061
79	6.58	0.33	0.082	(0.137)	0.015	0.067
80	6.67	0.33	0.082	(0.136)	0.015	0.067
81	6.75	0.33	0.082	(0.135)	0.015	0.067
82	6.83	0.33	0.082	(0.135)	0.015	0.067
83	6.92	0.33	0.082	(0.134)	0.015	0.067
84	7.00	0.33	0.082	(0.133)	0.015	0.067
85	7.08	0.33	0.082	(0.133)	0.015	0.067
86	7.17	0.33	0.082	(0.132)	0.015	0.067
87	7.25	0.33	0.082	(0.132)	0.015	0.067
88	7.33	0.37	0.090	(0.131)	0.016	0.074
89	7.42	0.37	0.090	(0.130)	0.016	0.074
90	7.50	0.37	0.090	(0.130)	0.016	0.074
91	7.58	0.40	0.098	(0.129)	0.018	0.081
92	7.67	0.40	0.098	(0.129)	0.018	0.081
93	7.75	0.40	0.098	(0.128)	0.018	0.081
94	7.83	0.43	0.107	(0.128)	0.019	0.087
95	7.92	0.43	0.107	(0.127)	0.019	0.087
96	8.00	0.43	0.107	(0.126)	0.019	0.087
97	8.08	0.50	0.123	(0.126)	0.022	0.101
98	8.17	0.50	0.123	(0.125)	0.022	0.101
99	8.25	0.50	0.123	(0.125)	0.022	0.101
100	8.33	0.50	0.123	(0.124)	0.022	0.101
101	8.42	0.50	0.123	(0.123)	0.022	0.101
102	8.50	0.50	0.123	(0.123)	0.022	0.101
103	8.58	0.53	0.131	(0.122)	0.024	0.108
104	8.67	0.53	0.131	(0.122)	0.024	0.108
105	8.75	0.53	0.131	(0.121)	0.024	0.108
106	8.83	0.57	0.139	(0.121)	0.025	0.114
107	8.92	0.57	0.139	(0.120)	0.025	0.114
108	9.00	0.57	0.139	(0.119)	0.025	0.114
109	9.08	0.63	0.156	(0.119)	0.028	0.128
110	9.17	0.63	0.156	(0.118)	0.028	0.128
111	9.25	0.63	0.156	(0.118)	0.028	0.128
112	9.33	0.67	0.164	(0.117)	0.030	0.134
113	9.42	0.67	0.164	(0.117)	0.030	0.134
114	9.50	0.67	0.164	(0.116)	0.030	0.134
115	9.58	0.70	0.172	(0.115)	0.031	0.141
116	9.67	0.70	0.172	(0.115)	0.031	0.141
117	9.75	0.70	0.172	(0.114)	0.031	0.141
118	9.83	0.73	0.180	(0.114)	0.032	0.148
119	9.92	0.73	0.180	(0.113)	0.032	0.148
120	10.00	0.73	0.180	(0.113)	0.032	0.148
121	10.08	0.50	0.123	(0.112)	0.022	0.101
122	10.17	0.50	0.123	(0.112)	0.022	0.101
123	10.25	0.50	0.123	(0.111)	0.022	0.101
124	10.33	0.50	0.123	(0.111)	0.022	0.101
125	10.42	0.50	0.123	(0.110)	0.022	0.101
126	10.50	0.50	0.123	(0.109)	0.022	0.101
127	10.58	0.67	0.164	(0.109)	0.030	0.134
128	10.67	0.67	0.164	(0.108)	0.030	0.134
129	10.75	0.67	0.164	(0.108)	0.030	0.134
130	10.83	0.67	0.164	(0.107)	0.030	0.134
131	10.92	0.67	0.164	(0.107)	0.030	0.134
132	11.00	0.67	0.164	(0.106)	0.030	0.134
133	11.08	0.63	0.156	(0.106)	0.028	0.128
134	11.17	0.63	0.156	(0.105)	0.028	0.128
135	11.25	0.63	0.156	(0.105)	0.028	0.128
136	11.33	0.63	0.156	(0.104)	0.028	0.128

137	11.42	0.63	0.156	(0.104)	0.028	0.128
138	11.50	0.63	0.156	(0.103)	0.028	0.128
139	11.58	0.57	0.139	(0.103)	0.025	0.114
140	11.67	0.57	0.139	(0.102)	0.025	0.114
141	11.75	0.57	0.139	(0.102)	0.025	0.114
142	11.83	0.60	0.148	(0.101)	0.027	0.121
143	11.92	0.60	0.148	(0.101)	0.027	0.121
144	12.00	0.60	0.148	(0.100)	0.027	0.121
145	12.08	0.83	0.205	(0.100)	0.037	0.168
146	12.17	0.83	0.205	(0.099)	0.037	0.168
147	12.25	0.83	0.205	(0.099)	0.037	0.168
148	12.33	0.87	0.213	(0.098)	0.038	0.175
149	12.42	0.87	0.213	(0.098)	0.038	0.175
150	12.50	0.87	0.213	(0.097)	0.038	0.175
151	12.58	0.93	0.230	(0.097)	0.041	0.188
152	12.67	0.93	0.230	(0.096)	0.041	0.188
153	12.75	0.93	0.230	(0.096)	0.041	0.188
154	12.83	0.97	0.238	(0.095)	0.043	0.195
155	12.92	0.97	0.238	(0.095)	0.043	0.195
156	13.00	0.97	0.238	(0.094)	0.043	0.195
157	13.08	1.13	0.279	(0.094)	0.050	0.229
158	13.17	1.13	0.279	(0.093)	0.050	0.229
159	13.25	1.13	0.279	(0.093)	0.050	0.229
160	13.33	1.13	0.279	(0.092)	0.050	0.229
161	13.42	1.13	0.279	(0.092)	0.050	0.229
162	13.50	1.13	0.279	(0.091)	0.050	0.229
163	13.58	0.77	0.189	(0.091)	0.034	0.155
164	13.67	0.77	0.189	(0.090)	0.034	0.155
165	13.75	0.77	0.189	(0.090)	0.034	0.155
166	13.83	0.77	0.189	(0.090)	0.034	0.155
167	13.92	0.77	0.189	(0.089)	0.034	0.155
168	14.00	0.77	0.189	(0.089)	0.034	0.155
169	14.08	0.90	0.221	(0.088)	0.040	0.182
170	14.17	0.90	0.221	(0.088)	0.040	0.182
171	14.25	0.90	0.221	(0.087)	0.040	0.182
172	14.33	0.87	0.213	(0.087)	0.038	0.175
173	14.42	0.87	0.213	(0.086)	0.038	0.175
174	14.50	0.87	0.213	(0.086)	0.038	0.175
175	14.58	0.87	0.213	(0.086)	0.038	0.175
176	14.67	0.87	0.213	(0.085)	0.038	0.175
177	14.75	0.87	0.213	(0.085)	0.038	0.175
178	14.83	0.83	0.205	(0.084)	0.037	0.168
179	14.92	0.83	0.205	(0.084)	0.037	0.168
180	15.00	0.83	0.205	(0.083)	0.037	0.168
181	15.08	0.80	0.197	(0.083)	0.035	0.161
182	15.17	0.80	0.197	(0.083)	0.035	0.161
183	15.25	0.80	0.197	(0.082)	0.035	0.161
184	15.33	0.77	0.189	(0.082)	0.034	0.155
185	15.42	0.77	0.189	(0.081)	0.034	0.155
186	15.50	0.77	0.189	(0.081)	0.034	0.155
187	15.58	0.63	0.156	(0.080)	0.028	0.128
188	15.67	0.63	0.156	(0.080)	0.028	0.128
189	15.75	0.63	0.156	(0.080)	0.028	0.128
190	15.83	0.63	0.156	(0.079)	0.028	0.128
191	15.92	0.63	0.156	(0.079)	0.028	0.128
192	16.00	0.63	0.156	(0.078)	0.028	0.128
193	16.08	0.13	0.033	(0.078)	0.006	0.027
194	16.17	0.13	0.033	(0.078)	0.006	0.027
195	16.25	0.13	0.033	(0.077)	0.006	0.027
196	16.33	0.13	0.033	(0.077)	0.006	0.027

197	16.42	0.13	0.033	(0.076)	0.006	0.027
198	16.50	0.13	0.033	(0.076)	0.006	0.027
199	16.58	0.10	0.025	(0.076)	0.004	0.020
200	16.67	0.10	0.025	(0.075)	0.004	0.020
201	16.75	0.10	0.025	(0.075)	0.004	0.020
202	16.83	0.10	0.025	(0.074)	0.004	0.020
203	16.92	0.10	0.025	(0.074)	0.004	0.020
204	17.00	0.10	0.025	(0.074)	0.004	0.020
205	17.08	0.17	0.041	(0.073)	0.007	0.034
206	17.17	0.17	0.041	(0.073)	0.007	0.034
207	17.25	0.17	0.041	(0.073)	0.007	0.034
208	17.33	0.17	0.041	(0.072)	0.007	0.034
209	17.42	0.17	0.041	(0.072)	0.007	0.034
210	17.50	0.17	0.041	(0.072)	0.007	0.034
211	17.58	0.17	0.041	(0.071)	0.007	0.034
212	17.67	0.17	0.041	(0.071)	0.007	0.034
213	17.75	0.17	0.041	(0.070)	0.007	0.034
214	17.83	0.13	0.033	(0.070)	0.006	0.027
215	17.92	0.13	0.033	(0.070)	0.006	0.027
216	18.00	0.13	0.033	(0.069)	0.006	0.027
217	18.08	0.13	0.033	(0.069)	0.006	0.027
218	18.17	0.13	0.033	(0.069)	0.006	0.027
219	18.25	0.13	0.033	(0.068)	0.006	0.027
220	18.33	0.13	0.033	(0.068)	0.006	0.027
221	18.42	0.13	0.033	(0.068)	0.006	0.027
222	18.50	0.13	0.033	(0.067)	0.006	0.027
223	18.58	0.10	0.025	(0.067)	0.004	0.020
224	18.67	0.10	0.025	(0.067)	0.004	0.020
225	18.75	0.10	0.025	(0.066)	0.004	0.020
226	18.83	0.07	0.016	(0.066)	0.003	0.013
227	18.92	0.07	0.016	(0.066)	0.003	0.013
228	19.00	0.07	0.016	(0.066)	0.003	0.013
229	19.08	0.10	0.025	(0.065)	0.004	0.020
230	19.17	0.10	0.025	(0.065)	0.004	0.020
231	19.25	0.10	0.025	(0.065)	0.004	0.020
232	19.33	0.13	0.033	(0.064)	0.006	0.027
233	19.42	0.13	0.033	(0.064)	0.006	0.027
234	19.50	0.13	0.033	(0.064)	0.006	0.027
235	19.58	0.10	0.025	(0.063)	0.004	0.020
236	19.67	0.10	0.025	(0.063)	0.004	0.020
237	19.75	0.10	0.025	(0.063)	0.004	0.020
238	19.83	0.07	0.016	(0.063)	0.003	0.013
239	19.92	0.07	0.016	(0.062)	0.003	0.013
240	20.00	0.07	0.016	(0.062)	0.003	0.013
241	20.08	0.10	0.025	(0.062)	0.004	0.020
242	20.17	0.10	0.025	(0.061)	0.004	0.020
243	20.25	0.10	0.025	(0.061)	0.004	0.020
244	20.33	0.10	0.025	(0.061)	0.004	0.020
245	20.42	0.10	0.025	(0.061)	0.004	0.020
246	20.50	0.10	0.025	(0.060)	0.004	0.020
247	20.58	0.10	0.025	(0.060)	0.004	0.020
248	20.67	0.10	0.025	(0.060)	0.004	0.020
249	20.75	0.10	0.025	(0.060)	0.004	0.020
250	20.83	0.07	0.016	(0.059)	0.003	0.013
251	20.92	0.07	0.016	(0.059)	0.003	0.013
252	21.00	0.07	0.016	(0.059)	0.003	0.013
253	21.08	0.10	0.025	(0.059)	0.004	0.020
254	21.17	0.10	0.025	(0.058)	0.004	0.020
255	21.25	0.10	0.025	(0.058)	0.004	0.020
256	21.33	0.07	0.016	(0.058)	0.003	0.013

257	21.42	0.07	0.016	(0.058)	0.003	0.013
258	21.50	0.07	0.016	(0.058)	0.003	0.013
259	21.58	0.10	0.025	(0.057)	0.004	0.020
260	21.67	0.10	0.025	(0.057)	0.004	0.020
261	21.75	0.10	0.025	(0.057)	0.004	0.020
262	21.83	0.07	0.016	(0.057)	0.003	0.013
263	21.92	0.07	0.016	(0.057)	0.003	0.013
264	22.00	0.07	0.016	(0.056)	0.003	0.013
265	22.08	0.10	0.025	(0.056)	0.004	0.020
266	22.17	0.10	0.025	(0.056)	0.004	0.020
267	22.25	0.10	0.025	(0.056)	0.004	0.020
268	22.33	0.07	0.016	(0.056)	0.003	0.013
269	22.42	0.07	0.016	(0.055)	0.003	0.013
270	22.50	0.07	0.016	(0.055)	0.003	0.013
271	22.58	0.07	0.016	(0.055)	0.003	0.013
272	22.67	0.07	0.016	(0.055)	0.003	0.013
273	22.75	0.07	0.016	(0.055)	0.003	0.013
274	22.83	0.07	0.016	(0.055)	0.003	0.013
275	22.92	0.07	0.016	(0.055)	0.003	0.013
276	23.00	0.07	0.016	(0.054)	0.003	0.013
277	23.08	0.07	0.016	(0.054)	0.003	0.013
278	23.17	0.07	0.016	(0.054)	0.003	0.013
279	23.25	0.07	0.016	(0.054)	0.003	0.013
280	23.33	0.07	0.016	(0.054)	0.003	0.013
281	23.42	0.07	0.016	(0.054)	0.003	0.013
282	23.50	0.07	0.016	(0.054)	0.003	0.013
283	23.58	0.07	0.016	(0.054)	0.003	0.013
284	23.67	0.07	0.016	(0.054)	0.003	0.013
285	23.75	0.07	0.016	(0.054)	0.003	0.013
286	23.83	0.07	0.016	(0.053)	0.003	0.013
287	23.92	0.07	0.016	(0.053)	0.003	0.013
288	24.00	0.07	0.016	(0.053)	0.003	0.013

(Loss Rate Not Used)

Sum = 100.0 Sum = 20.2

Flood volume = Effective rainfall 1.68(In)
times area 6.8(Ac.)/[(In)/(Ft.)] = 1.0(Ac.Ft)
Total soil loss = 0.37(In)
Total soil loss = 0.209(Ac.Ft)
Total rainfall = 2.05(In)
Flood volume = 41432.2 Cubic Feet
Total soil loss = 9094.9 Cubic Feet

Peak flow rate of this hydrograph = 1.555(CFS)

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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))

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	0.0005	0.06	Q	|	|	|	|
0+15	0.0010	0.07	Q	|	|	|	|
0+20	0.0016	0.09	Q	|	|	|	|
0+25	0.0024	0.11	Q	|	|	|	|
0+30	0.0033	0.12	Q	|	|	|	|
0+35	0.0042	0.13	Q	|	|	|	|

0+40	0.0051	0.13	Q	|	|	|	|
0+45	0.0060	0.14	Q	|	|	|	|
0+50	0.0070	0.14	Q	|	|	|	|
0+55	0.0082	0.17	Q	|	|	|	|
1+ 0	0.0094	0.18	Q	|	|	|	|
1+ 5	0.0106	0.17	Q	|	|	|	|
1+10	0.0116	0.15	Q	|	|	|	|
1+15	0.0126	0.14	Q	|	|	|	|
1+20	0.0136	0.14	Q	|	|	|	|
1+25	0.0145	0.14	Q	|	|	|	|
1+30	0.0155	0.14	Q	|	|	|	|
1+35	0.0165	0.14	Q	|	|	|	|
1+40	0.0174	0.14	Q	|	|	|	|
1+45	0.0184	0.14	Q	|	|	|	|
1+50	0.0194	0.15	Q	|	|	|	|
1+55	0.0205	0.17	Q	|	|	|	|
2+ 0	0.0217	0.18	Q	|	|	|	|
2+ 5	0.0230	0.18	Q	|	|	|	|
2+10	0.0242	0.18	QV	|	|	|	|
2+15	0.0255	0.18	QV	|	|	|	|
2+20	0.0267	0.18	QV	|	|	|	|
2+25	0.0280	0.18	QV	|	|	|	|
2+30	0.0293	0.18	QV	|	|	|	|
2+35	0.0306	0.19	QV	|	|	|	|
2+40	0.0320	0.21	QV	|	|	|	|
2+45	0.0336	0.22	QV	|	|	|	|
2+50	0.0351	0.22	QV	|	|	|	|
2+55	0.0367	0.23	QV	|	|	|	|
3+ 0	0.0382	0.23	QV	|	|	|	|
3+ 5	0.0398	0.23	QV	|	|	|	|
3+10	0.0414	0.23	QV	|	|	|	|
3+15	0.0430	0.23	QV	|	|	|	|
3+20	0.0446	0.23	QV	|	|	|	|
3+25	0.0462	0.23	QV	|	|	|	|
3+30	0.0477	0.23	Q V	|	|	|	|
3+35	0.0493	0.23	Q V	|	|	|	|
3+40	0.0509	0.23	Q V	|	|	|	|
3+45	0.0525	0.23	Q V	|	|	|	|
3+50	0.0541	0.24	Q V	|	|	|	|
3+55	0.0559	0.26	|QV	|	|	|	|
4+ 0	0.0578	0.27	|QV	|	|	|	|
4+ 5	0.0596	0.27	|QV	|	|	|	|
4+10	0.0615	0.27	|QV	|	|	|	|
4+15	0.0634	0.27	|QV	|	|	|	|
4+20	0.0653	0.28	|QV	|	|	|	|
4+25	0.0674	0.30	|QV	|	|	|	|
4+30	0.0696	0.31	|QV	|	|	|	|
4+35	0.0718	0.32	|Q V	|	|	|	|
4+40	0.0740	0.32	|Q V	|	|	|	|
4+45	0.0762	0.32	|Q V	|	|	|	|
4+50	0.0784	0.33	|Q V	|	|	|	|
4+55	0.0809	0.35	|Q V	|	|	|	|
5+ 0	0.0833	0.36	|Q V	|	|	|	|
5+ 5	0.0857	0.35	|Q V	|	|	|	|
5+10	0.0878	0.31	|Q V	|	|	|	|
5+15	0.0899	0.29	|Q V	|	|	|	|
5+20	0.0919	0.29	|Q V	|	|	|	|
5+25	0.0940	0.31	|Q V	|	|	|	|
5+30	0.0962	0.32	|Q V	|	|	|	|
5+35	0.0985	0.33	|Q V	|	|	|	|

5+40	0.1009	0.35	Q V				
5+45	0.1033	0.36	Q V				
5+50	0.1058	0.36	Q V				
5+55	0.1083	0.36	Q V				
6+ 0	0.1108	0.37	Q V				
6+ 5	0.1134	0.37	Q V				
6+10	0.1162	0.40	Q V				
6+15	0.1189	0.41	Q V				
6+20	0.1218	0.41	Q V				
6+25	0.1246	0.41	Q V				
6+30	0.1274	0.41	Q V				
6+35	0.1303	0.42	Q V				
6+40	0.1334	0.44	Q V				
6+45	0.1365	0.45	Q V				
6+50	0.1396	0.45	Q V				
6+55	0.1428	0.46	Q V				
7+ 0	0.1459	0.46	Q V				
7+ 5	0.1491	0.46	Q V				
7+10	0.1522	0.46	Q V				
7+15	0.1554	0.46	Q V				
7+20	0.1586	0.47	Q V				
7+25	0.1620	0.49	Q V				
7+30	0.1654	0.50	Q V				
7+35	0.1689	0.51	Q V				
7+40	0.1726	0.53	Q V				
7+45	0.1763	0.54	Q V				
7+50	0.1801	0.55	Q V				
7+55	0.1841	0.58	Q V				
8+ 0	0.1882	0.59	Q V				
8+ 5	0.1923	0.61	Q V				
8+10	0.1968	0.65	Q V				
8+15	0.2015	0.67	Q V				
8+20	0.2061	0.68	Q V				
8+25	0.2108	0.68	Q V				
8+30	0.2156	0.69	Q V				
8+35	0.2203	0.70	Q V				
8+40	0.2253	0.72	Q V				
8+45	0.2303	0.73	Q V				
8+50	0.2354	0.74	Q V				
8+55	0.2406	0.76	Q V				
9+ 0	0.2460	0.77	Q V				
9+ 5	0.2514	0.79	Q V				
9+10	0.2572	0.84	Q V				
9+15	0.2630	0.85	Q V				
9+20	0.2690	0.87	Q V				
9+25	0.2752	0.90	Q V				
9+30	0.2815	0.91	Q V				
9+35	0.2878	0.92	Q V				
9+40	0.2943	0.95	Q V				
9+45	0.3009	0.96	Q V				
9+50	0.3076	0.97	Q V				
9+55	0.3144	0.99	Q V				
10+ 0	0.3213	1.00	Q V				
10+ 5	0.3279	0.95	Q V				
10+10	0.3334	0.81	Q V				
10+15	0.3386	0.75	Q V				
10+20	0.3436	0.73	Q V				
10+25	0.3485	0.71	Q V				
10+30	0.3534	0.71	Q V				
10+35	0.3584	0.74	Q V				

10+40	0.3642	0.84	Q	V				
10+45	0.3702	0.88	Q	V				
10+50	0.3764	0.89	Q	V				
10+55	0.3826	0.90	Q	V				
11+ 0	0.3889	0.91	Q	V				
11+ 5	0.3951	0.91	Q	V				
11+10	0.4013	0.89	Q	V				
11+15	0.4073	0.88	Q	V				
11+20	0.4134	0.88	Q	V				
11+25	0.4195	0.88	Q	V				
11+30	0.4255	0.88	Q	V				
11+35	0.4314	0.86	Q	V				
11+40	0.4371	0.82	Q	V				
11+45	0.4426	0.80	Q	V				
11+50	0.4481	0.80	Q	V				
11+55	0.4537	0.82	Q	V				
12+ 0	0.4594	0.82	Q	V				
12+ 5	0.4654	0.88	Q	V				
12+10	0.4725	1.03	Q	V				
12+15	0.4800	1.09	Q	V				
12+20	0.4877	1.12	Q	V				
12+25	0.4957	1.16	Q	V				
12+30	0.5038	1.17	Q	V				
12+35	0.5120	1.20	Q	V				
12+40	0.5206	1.25	Q	V				
12+45	0.5293	1.27	Q	V				
12+50	0.5382	1.28	Q	V				
12+55	0.5472	1.31	Q	V				
13+ 0	0.5563	1.32	Q	V				
13+ 5	0.5657	1.36	Q	V				
13+10	0.5759	1.48	Q	V				
13+15	0.5863	1.52	Q	V				
13+20	0.5969	1.54	Q	V				
13+25	0.6076	1.55	Q	V				
13+30	0.6183	1.55	Q	V				
13+35	0.6285	1.48	Q	V				
13+40	0.6370	1.24	Q	V				
13+45	0.6450	1.16	Q	V				
13+50	0.6527	1.12	Q	V				
13+55	0.6602	1.10	Q	V				
14+ 0	0.6677	1.08	Q	V				
14+ 5	0.6753	1.10	Q	V				
14+10	0.6834	1.18	Q	V				
14+15	0.6917	1.21	Q	V				
14+20	0.7001	1.21	Q	V				
14+25	0.7083	1.20	Q	V				
14+30	0.7166	1.20	Q	V				
14+35	0.7248	1.20	Q	V				
14+40	0.7331	1.20	Q	V				
14+45	0.7414	1.20	Q	V				
14+50	0.7496	1.19	Q	V				
14+55	0.7576	1.17	Q	V				
15+ 0	0.7656	1.16	Q	V				
15+ 5	0.7735	1.15	Q	V				
15+10	0.7813	1.13	Q	V				
15+15	0.7889	1.12	Q	V				
15+20	0.7965	1.10	Q	V				
15+25	0.8040	1.08	Q	V				
15+30	0.8113	1.07	Q	V				
15+35	0.8185	1.04	Q	V				

15+40	0.8250	0.95	| Q	|	|	| V	|
15+45	0.8313	0.91	| Q	|	|	| V	|
15+50	0.8375	0.90	| Q	|	|	| V	|
15+55	0.8436	0.89	| Q	|	|	| V	|
16+ 0	0.8497	0.88	| Q	|	|	| V	|
16+ 5	0.8550	0.77	| Q	|	|	| V	|
16+10	0.8580	0.44	|Q	|	|	| V	|
16+15	0.8602	0.32	|Q	|	|	| V	|
16+20	0.8620	0.27	|Q	|	|	| V	|
16+25	0.8637	0.23	Q	|	|	| V	|
16+30	0.8651	0.22	Q	|	|	| V	|
16+35	0.8665	0.19	Q	|	|	| V	|
16+40	0.8676	0.16	Q	|	|	| V	|
16+45	0.8686	0.15	Q	|	|	| V	|
16+50	0.8696	0.14	Q	|	|	| V	|
16+55	0.8706	0.14	Q	|	|	| V	|
17+ 0	0.8715	0.14	Q	|	|	| V	|
17+ 5	0.8726	0.15	Q	|	|	| V	|
17+10	0.8740	0.20	Q	|	|	| V	|
17+15	0.8754	0.21	Q	|	|	| V	|
17+20	0.8769	0.22	Q	|	|	| V	|
17+25	0.8785	0.22	Q	|	|	| V	|
17+30	0.8800	0.23	Q	|	|	| V	|
17+35	0.8816	0.23	Q	|	|	| V	|
17+40	0.8832	0.23	Q	|	|	| V	|
17+45	0.8848	0.23	Q	|	|	| V	|
17+50	0.8863	0.22	Q	|	|	| V	|
17+55	0.8877	0.20	Q	|	|	| V	|
18+ 0	0.8890	0.19	Q	|	|	| V	|
18+ 5	0.8903	0.19	Q	|	|	| V	|
18+10	0.8916	0.19	Q	|	|	| V	|
18+15	0.8929	0.19	Q	|	|	| V	|
18+20	0.8942	0.19	Q	|	|	| V	|
18+25	0.8954	0.18	Q	|	|	| V	|
18+30	0.8967	0.18	Q	|	|	| V	|
18+35	0.8979	0.18	Q	|	|	| V	|
18+40	0.8990	0.16	Q	|	|	| V	|
18+45	0.9000	0.15	Q	|	|	| V	|
18+50	0.9009	0.14	Q	|	|	| V	|
18+55	0.9017	0.11	Q	|	|	| V	|
19+ 0	0.9024	0.10	Q	|	|	| V	|
19+ 5	0.9032	0.11	Q	|	|	| V	|
19+10	0.9040	0.13	Q	|	|	| V	|
19+15	0.9049	0.13	Q	|	|	| V	|
19+20	0.9059	0.14	Q	|	|	| V	|
19+25	0.9070	0.16	Q	|	|	| V	|
19+30	0.9082	0.17	Q	|	|	| V	|
19+35	0.9094	0.17	Q	|	|	| V	|
19+40	0.9104	0.15	Q	|	|	| V	|
19+45	0.9114	0.14	Q	|	|	| V	|
19+50	0.9124	0.13	Q	|	|	| V	|
19+55	0.9131	0.11	Q	|	|	| V	|
20+ 0	0.9138	0.10	Q	|	|	| V	|
20+ 5	0.9146	0.11	Q	|	|	| V	|
20+10	0.9154	0.13	Q	|	|	| V	|
20+15	0.9163	0.13	Q	|	|	| V	|
20+20	0.9173	0.13	Q	|	|	| V	|
20+25	0.9182	0.14	Q	|	|	| V	|
20+30	0.9191	0.14	Q	|	|	| V	|
20+35	0.9201	0.14	Q	|	|	| V	|

20+40	0.9210	0.14	Q	|	|	|	V |
20+45	0.9220	0.14	Q	|	|	|	V |
20+50	0.9229	0.13	Q	|	|	|	V |
20+55	0.9236	0.11	Q	|	|	|	V |
21+ 0	0.9243	0.10	Q	|	|	|	V |
21+ 5	0.9250	0.10	Q	|	|	|	V |
21+10	0.9259	0.12	Q	|	|	|	V |
21+15	0.9268	0.13	Q	|	|	|	V |
21+20	0.9277	0.13	Q	|	|	|	V|
21+25	0.9284	0.11	Q	|	|	|	V|
21+30	0.9291	0.10	Q	|	|	|	V|
21+35	0.9298	0.10	Q	|	|	|	V|
21+40	0.9307	0.12	Q	|	|	|	V|
21+45	0.9316	0.13	Q	|	|	|	V|
21+50	0.9324	0.13	Q	|	|	|	V|
21+55	0.9332	0.11	Q	|	|	|	V|
22+ 0	0.9338	0.10	Q	|	|	|	V|
22+ 5	0.9346	0.10	Q	|	|	|	V|
22+10	0.9354	0.12	Q	|	|	|	V|
22+15	0.9363	0.13	Q	|	|	|	V|
22+20	0.9372	0.13	Q	|	|	|	V|
22+25	0.9379	0.11	Q	|	|	|	V|
22+30	0.9386	0.10	Q	|	|	|	V|
22+35	0.9393	0.10	Q	|	|	|	V|
22+40	0.9399	0.09	Q	|	|	|	V|
22+45	0.9406	0.09	Q	|	|	|	V|
22+50	0.9412	0.09	Q	|	|	|	V|
22+55	0.9418	0.09	Q	|	|	|	V|
23+ 0	0.9425	0.09	Q	|	|	|	V|
23+ 5	0.9431	0.09	Q	|	|	|	V|
23+10	0.9437	0.09	Q	|	|	|	V|
23+15	0.9444	0.09	Q	|	|	|	V|
23+20	0.9450	0.09	Q	|	|	|	V|
23+25	0.9456	0.09	Q	|	|	|	V|
23+30	0.9463	0.09	Q	|	|	|	V|
23+35	0.9469	0.09	Q	|	|	|	V|
23+40	0.9476	0.09	Q	|	|	|	V|
23+45	0.9482	0.09	Q	|	|	|	V|
23+50	0.9488	0.09	Q	|	|	|	V|
23+55	0.9495	0.09	Q	|	|	|	V|
24+ 0	0.9501	0.09	Q	|	|	|	V|
24+ 5	0.9506	0.08	Q	|	|	|	V|
24+10	0.9509	0.03	Q	|	|	|	V|
24+15	0.9510	0.02	Q	|	|	|	V|
24+20	0.9511	0.01	Q	|	|	|	V|
24+25	0.9511	0.01	Q	|	|	|	V|
24+30	0.9511	0.00	Q	|	|	|	V|
24+35	0.9511	0.00	Q	|	|	|	V|
24+40	0.9512	0.00	Q	|	|	|	V|

APPENDIX E

OFF-SITE HYDROLOGY BASED ON EXISTING CONDITION (RATIONAL METHOD)

APPENDIX E.1

100-YEAR HYDROLOGY CALCULATIONS (OFF-SITE)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/23/22 File:100.out

1494-0013 MENIFEE INDUSTRIAL 3
OFF SITE ANALYSIS
100-YEAR STORM EVENT

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

AREA B1

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

Initial area flow distance = 421.000(Ft.)
Top (of initial area) elevation = 22.200(Ft.)
Bottom (of initial area) elevation = 21.100(Ft.)
Difference in elevation = 1.100(Ft.)
Slope = 0.00261 s(percent)= 0.26
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 19.524 min.

```
Rainfall intensity =      1.941(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.865
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 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      2.166(CFS)
Total initial stream area =        1.290(Ac.)
Pervious area fraction = 1.000


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AREA B2

```
Process from Point/Station      102.000 to Point/Station      103.000
**** INITIAL AREA EVALUATION ****
________________________________________________________________________
Initial area flow distance =   747.000(Ft.)
Top (of initial area) elevation =    22.800(Ft.)
Bottom (of initial area) elevation =    20.900(Ft.)
Difference in elevation =     1.900(Ft.)
Slope =    0.00254  s(percent)=       0.25
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration =   24.690 min.
Rainfall intensity =      1.731(In/Hr) for a   100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.861
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 3)  =  94.40
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      4.081(CFS)
Total initial stream area =        2.740(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            4.03 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  86.0
```

APPENDIX F

REFERENCES



Map Scale: 1:1,320 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 15 30 60 90

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 14, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
EnA	Exeter sandy loam, 0 to 2 percent slopes	C	5.7	79.6%
MaA	Madera fine sandy loam, 0 to 2 percent slopes	D	1.5	20.4%
Totals for Area of Interest			**7.2**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.7423°, Longitude: -117.1968°
Elevation: 1421.48 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.086** (0.072-0.104)	**0.124** (0.104-0.150)	**0.176** (0.146-0.213)	**0.220** (0.182-0.269)	**0.283** (0.226-0.358)	**0.334** (0.261-0.433)	**0.389** (0.296-0.516)	**0.447** (0.330-0.612)	**0.531** (0.376-0.759)	**0.600** (0.409-0.889)
10-min	**0.124** (0.104-0.150)	**0.178** (0.149-0.215)	**0.252** (0.210-0.305)	**0.315** (0.260-0.385)	**0.406** (0.324-0.514)	**0.479** (0.374-0.620)	**0.557** (0.424-0.740)	**0.641** (0.474-0.877)	**0.762** (0.539-1.09)	**0.860** (0.587-1.27)
15-min	**0.150** (0.126-0.181)	**0.215** (0.180-0.260)	**0.304** (0.254-0.369)	**0.381** (0.315-0.466)	**0.491** (0.391-0.621)	**0.579** (0.452-0.750)	**0.674** (0.513-0.895)	**0.776** (0.573-1.06)	**0.921** (0.651-1.32)	**1.04** (0.710-1.54)
30-min	**0.244** (0.204-0.294)	**0.349** (0.292-0.422)	**0.495** (0.412-0.599)	**0.619** (0.511-0.756)	**0.797** (0.636-1.01)	**0.941** (0.735-1.22)	**1.10** (0.833-1.45)	**1.26** (0.931-1.72)	**1.50** (1.06-2.14)	**1.69** (1.15-2.50)
60-min	**0.349** (0.292-0.421)	**0.500** (0.418-0.604)	**0.708** (0.591-0.859)	**0.887** (0.733-1.08)	**1.14** (0.911-1.45)	**1.35** (1.05-1.75)	**1.57** (1.19-2.08)	**1.81** (1.33-2.47)	**2.14** (1.52-3.06)	**2.42** (1.65-3.59)
2-hr	**0.517** (0.433-0.624)	**0.702** (0.587-0.848)	**0.951** (0.793-1.15)	**1.16** (0.959-1.42)	**1.45** (1.16-1.84)	**1.69** (1.32-2.18)	**1.93** (1.47-2.56)	**2.18** (1.61-2.99)	**2.54** (1.80-3.63)	**2.83** (1.93-4.19)
3-hr	**0.634** (0.531-0.766)	**0.844** (0.705-1.02)	**1.13** (0.937-1.36)	**1.36** (1.12-1.66)	**1.68** (1.34-2.13)	**1.94** (1.51-2.51)	**2.20** (1.68-2.93)	**2.48** (1.83-3.39)	**2.87** (2.03-4.10)	**3.18** (2.17-4.70)
6-hr	**0.896** (0.750-1.08)	**1.17** (0.979-1.42)	**1.54** (1.28-1.86)	**1.84** (1.52-2.25)	**2.26** (1.80-2.86)	**2.58** (2.02-3.34)	**2.92** (2.22-3.87)	**3.27** (2.41-4.46)	**3.75** (2.65-5.35)	**4.12** (2.81-6.10)
12-hr	**1.18** (0.991-1.43)	**1.55** (1.30-1.87)	**2.04** (1.70-2.47)	**2.44** (2.02-2.98)	**2.99** (2.39-3.79)	**3.43** (2.68-4.43)	**3.87** (2.95-5.14)	**4.34** (3.21-5.93)	**4.98** (3.52-7.12)	**5.49** (3.74-8.13)
24-hr	**1.54** (1.36-1.78)	**2.05** (1.81-2.36)	**2.72** (2.40-3.15)	**3.28** (2.87-3.83)	**4.06** (3.44-4.90)	**4.68** (3.88-5.75)	**5.32** (4.31-6.70)	**5.99** (4.72-7.75)	**6.92** (5.25-9.32)	**7.67** (5.62-10.7)
2-day	**1.81** (1.60-2.09)	**2.45** (2.17-2.83)	**3.32** (2.92-3.84)	**4.05** (3.54-4.72)	**5.07** (4.29-6.11)	**5.88** (4.88-7.24)	**6.74** (5.46-8.49)	**7.64** (6.03-9.89)	**8.91** (6.75-12.0)	**9.94** (7.28-13.8)
3-day	**1.93** (1.71-2.23)	**2.65** (2.34-3.06)	**3.63** (3.20-4.21)	**4.46** (3.90-5.21)	**5.64** (4.77-6.80)	**6.59** (5.46-8.10)	**7.58** (6.14-9.55)	**8.64** (6.82-11.2)	**10.1** (7.69-13.7)	**11.4** (8.33-15.8)
4-day	**2.07** (1.83-2.39)	**2.87** (2.54-3.32)	**3.97** (3.50-4.60)	**4.91** (4.29-5.73)	**6.24** (5.28-7.53)	**7.32** (6.07-9.00)	**8.45** (6.85-10.6)	**9.67** (7.63-12.5)	**11.4** (8.64-15.4)	**12.8** (9.39-17.9)
7-day	**2.33** (2.06-2.69)	**3.29** (2.91-3.80)	**4.63** (4.08-5.36)	**5.78** (5.05-6.75)	**7.43** (6.29-8.95)	**8.77** (7.27-10.8)	**10.2** (8.26-12.8)	**11.7** (9.26-15.2)	**14.0** (10.6-18.8)	**15.8** (11.6-22.0)
10-day	**2.45** (2.16-2.82)	**3.50** (3.09-4.05)	**4.97** (4.38-5.76)	**6.25** (5.46-7.29)	**8.08** (6.84-9.74)	**9.59** (7.95-11.8)	**11.2** (9.07-14.1)	**12.9** (10.2-16.7)	**15.5** (11.7-20.8)	**17.6** (12.9-24.4)
20-day	**2.87** (2.54-3.31)	**4.18** (3.69-4.82)	**6.03** (5.31-6.98)	**7.65** (6.68-8.93)	**10.0** (8.48-12.1)	**12.0** (9.95-14.8)	**14.1** (11.5-17.8)	**16.5** (13.0-21.3)	**19.9** (15.1-26.9)	**22.8** (16.7-31.8)
30-day	**3.42** (3.02-3.94)	**4.97** (4.39-5.74)	**7.20** (6.34-8.34)	**9.16** (8.01-10.7)	**12.1** (10.2-14.6)	**14.5** (12.1-17.9)	**17.2** (13.9-21.7)	**20.2** (15.9-26.1)	**24.6** (18.6-33.1)	**28.3** (20.7-39.4)
45-day	**3.99** (3.53-4.60)	**5.74** (5.07-6.63)	**8.28** (7.30-9.60)	**10.6** (9.22-12.3)	**14.0** (11.8-16.8)	**16.9** (14.0-20.7)	**20.1** (16.2-25.3)	**23.6** (18.6-30.6)	**29.0** (22.0-39.1)	**33.6** (24.6-46.8)
60-day	**4.64** (4.10-5.35)	**6.57** (5.80-7.59)	**9.39** (8.27-10.9)	**11.9** (10.4-13.9)	**15.8** (13.4-19.0)	**19.1** (15.8-23.5)	**22.8** (18.5-28.7)	**26.9** (21.2-34.9)	**33.2** (25.2-44.8)	**38.7** (28.3-53.9)

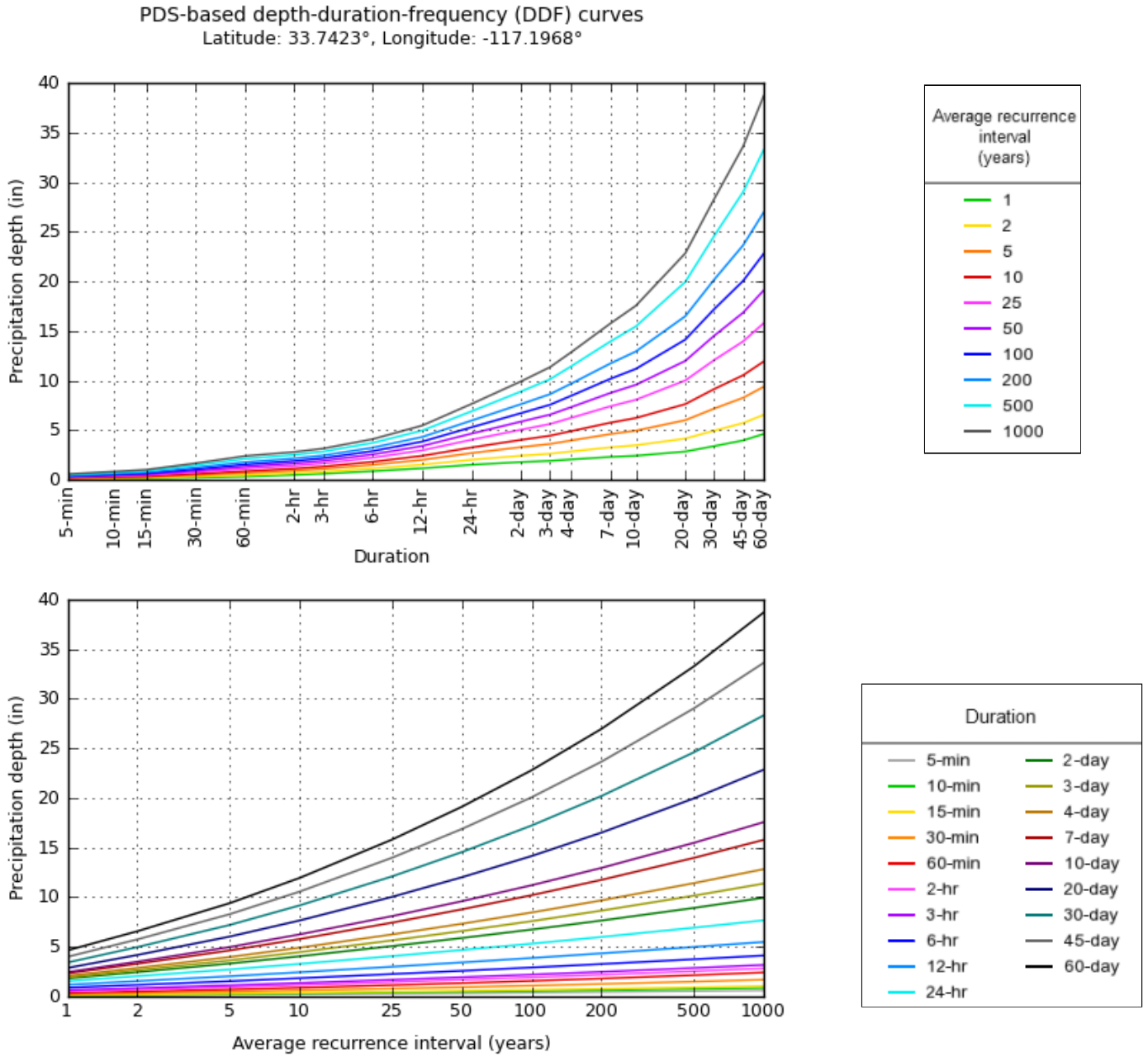
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



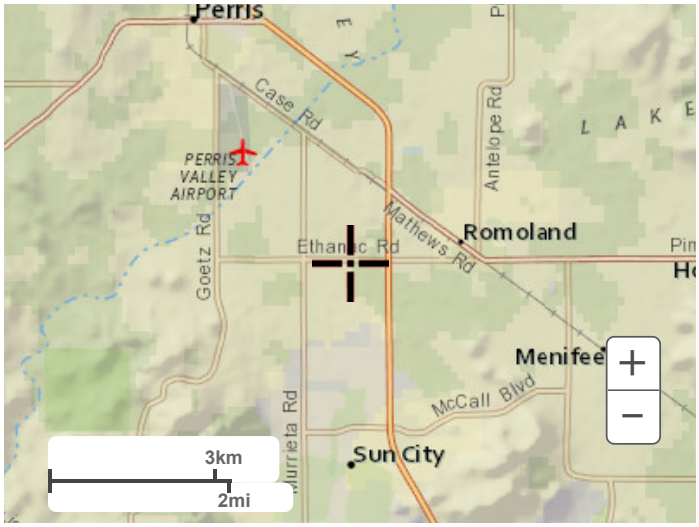
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Jun 14 22:19:37 2022

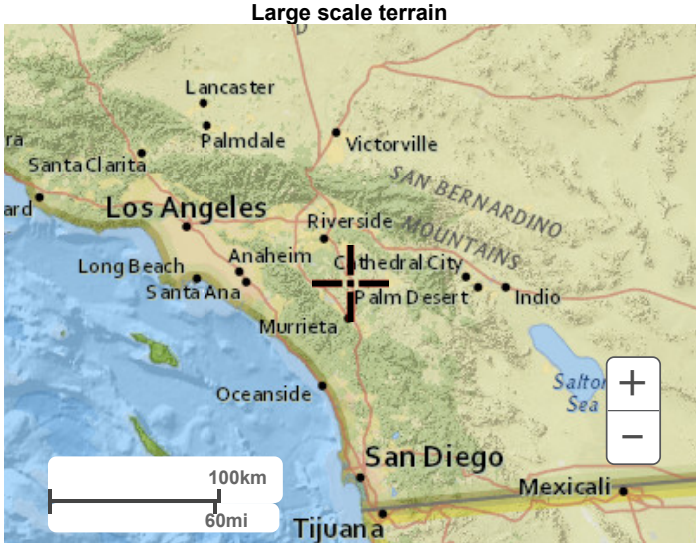
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Maps & aerials

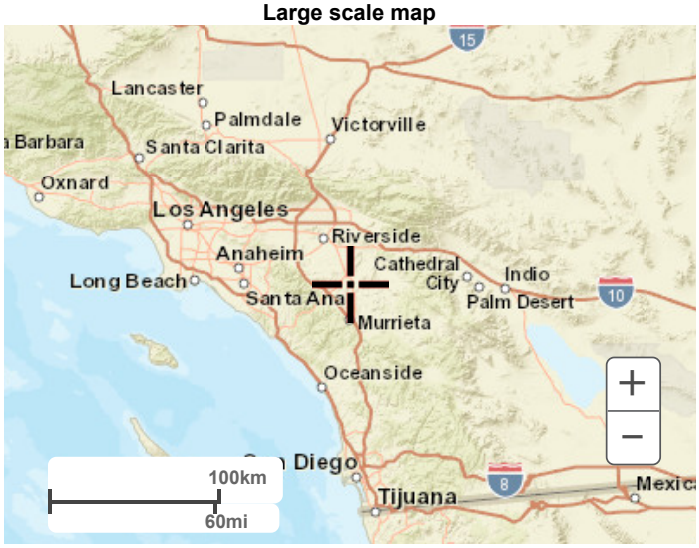
Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

PLATE D-5.5 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

3. See Plate C-2 for a detailed description of cover types.

4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

ACTUAL IMPERVIOUS COVER

Land Use (1)	Range-Percent	Recommended Value For Average Conditions-Percent(2)
Natural or Agriculture	0 - 10	0
Single Family Residential: (3)		
40,000 S. F. (1 Acre) Lots	10 - 25	20
20,000 S. F. (½ Acre) Lots	30 - 45	40
7,200 - 10,000 S. F. Lots	45 - 55	50
Multiple Family Residential:		
Condominiums	45 - 70	65
Apartments	65 - 90	80
Mobile Home Park	60 - 85	75
Commercial, Downtown Business or Industrial	80 -100	90

Notes:

1. Land use should be based on ultimate development of the watershed. Long range master plans for the County and incorporated cities should be reviewed to insure reasonable land use assumptions.

2. Recommended values are based on average conditions which may not apply to a particular study area. The percentage impervious may vary greatly even on comparable sized lots due to differences in dwelling size, improvements, etc. Landscape practices should also be considered as it is common in some areas to use ornamental gravels underlain by impervious plastic materials in place of lawns and shrubs. A field investigation of a study area should always be made, and a review of aerial photos, where available may assist in estimating the percentage of impervious cover in developed areas.

3. For typical horse ranch subdivisions increase impervious area 5 percent over the values recommended in the table above.

RCFC & WCD
HYDROLOGY MANUAL

IMPERVIOUS COVER FOR DEVELOPED AREAS

PLATE D-5.6

EXHIBIT A

HYDROLOGY MAP (EXISTING CONDITION; RATIONAL METHOD)

ETHANAC ROAD

EXISTING CULVERT

EXISTING R/W

EXISTING RAISED MEDIAN

EXISTING EDGE OF PAVEMENT

EXISTING CATCH BASIN

92'

62'

30'

PROPOSED R/W

ROAD

EXISTING EDGE OF DIRT TRAVELED WAY

39'

30'

9'

101
19.80

APN
331-060-018

EXISTING FARM LOT LINE TO BE REMOVED

L=576'

P.L.

A1
6.79

100
21.30

APN
331-060-014

EXISTING R/W

PROPOSED R/W

EXISTING IRRIGATION LINE, TYP.

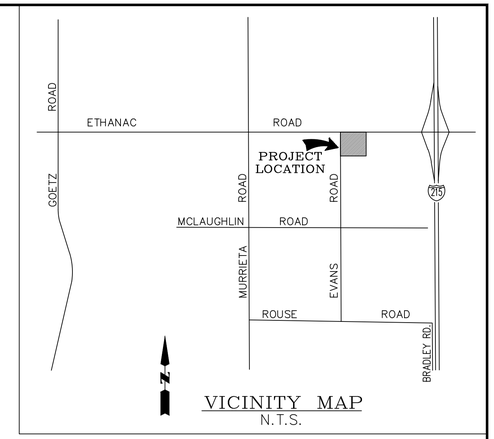
EVANS

RIVERSIDE COUNTY FLOOD CONTROL CHANNEL

APN
331-060-019

APN 331-060-025 P.L.

(1420) (1421) (1422)



VICINITY MAP
N.T.S.

LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

N

GRAPHIC SCALE
30 0 15 30 60
1" = 30'

EXHIBIT "A"

RATIONAL METHOD HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES EXISTING CONDITION

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cel-casc.com

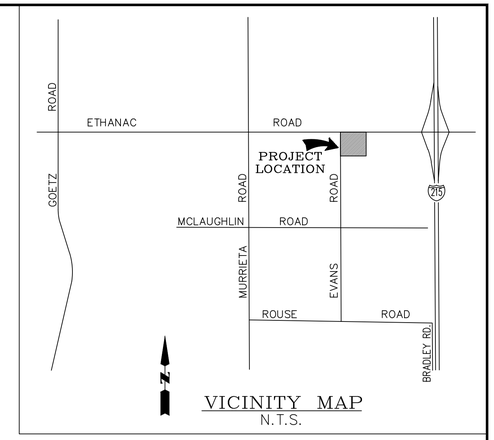
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Last Updated: Oct 24, 2023 - 4:47pm by cfigueroa

EXHIBIT B

HYDROLOGY MAP (PROPOSED CONDITION; RATIONAL METHOD)

ETHANAC ROAD

EXISTING CULVERT
EXISTING R/W
EXISTING RAISED MEDIAN
EXISTING EDGE OF PAVEMENT
EXISTING CATCH BASIN
PROPOSED CURB, GUTTER, AND SIDEWALK
PROPOSED R/W
PROPOSED PUBLIC STORM DRAIN TO CONNECT TO EXISTING CHANNEL NORTH OF ETHANAC ROAD
PROPOSED DROP INLET
L=532'
101
17.30
13.0INV(S)
14.0INV(W)
103
21.90
11.7OINV
EXISTING EDGE OF DIRT TRAVELED WAY
PROPOSED CURB OPENING MODULAR WETLANDS FOR WATER QUALITY PURPOSES
100
20.80
APN
331-060-018
EXISTING FARM LOT LINE TO BE REMOVED
PROPOSED STORM DRAIN FROM MODULAR WETLANDS TO PUBLIC STORM DRAIN
A1
3.40
APN
331-060-014
EXISTING R/W
PROPOSED R/W
EXISTING IRRIGATION LINE, TYP.
PROPOSED 138,534 SF BUILDING
A2
3.39
PROPOSED STORM DRAIN TO UNDERGROUND BASIN L=450'
PROPOSED MODULAR WETLANDS FOR WATER QUALITY PURPOSES
PROPOSED SUMP AND PUMP TO MODULAR WETLANDS
PROPOSED STORM DRAIN TO SUMP AND PUMP
PROPOSED STORM DRAIN TO UNDERGROUND BASIN
7.35INV
8.30INV
L=535'
PROPOSED APPROXIMATELY 42,300 CF UNDERGROUND BASIN
5.50INV
PROPOSED CONCRETE CHANNEL FOR OFF-SITE BYPASS
102
16.60
PROPOSED DROP INLET
APN 331-060-025 P.L.
APN
331-060-019
RIVERSIDE COUNTY FLOOD CONTROL CHANNEL
EVANS ROAD
P.L.



VICINITY MAP
N.T.S.

LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION
XX / X.XX — SUBAREA / ACRES
L=XXX' — MAIN FLOW PATH
FLOW PATH
WATERSHED BOUNDARY

GRAPHIC SCALE
30 0 15 30 60
1" = 30'

EXHIBIT "B"
RATIONAL METHOD
HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES
PROPOSED CONDITION

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-cosc.com

Drawing Name: \\cei-nas1\cei\1494-0013 CORE, Evans Road Menifee #4\Study Drainage\Hydrology Maps\1494-0013 HYDROLOGY MAP.dwg
Last Opened: Oct 23, 2023 - 4:45pm by cfigueroa

EXHIBIT C

HYDROLOGY MAP (OFF-SITE; RATIONAL METHOD)

ROAD

EVANS

℄

PROJECT SITE

APN 331-060-025 P.L.

(1421)

PROPOSED CONCRETE CHANNEL FOR OFF-SITE BYPASS

103
20.9

101
21.1

L=421'

B1
1.29

B2
2.74

L=747'

100
22.2

EXISTING LOT LINE

APN
331-060-025

APN
331-060-026

RIVERSIDE COUNTY FLOOD CONTROL CHANNEL

102
22.8

ROAD
ETHANAC ROAD
PROJECT LOCATION
GOETZ ROAD
ROAD
MCLAUGHLIN ROAD
MURRIETA ROAD
EVANS ROAD
ROUSE ROAD
BRADLEY RD
215

N

VICINITY MAP
N.T.S.

LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

N

GRAPHIC SCALE
30 0 15 30 60
1" = 30'

EXHIBIT "C"

RATIONAL METHOD HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES OFF-SITE AREAS

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-cosc.com

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APPENDIX I4

EVANS AND ETHANAC WATER QUALITY MANAGEMENT PLAN

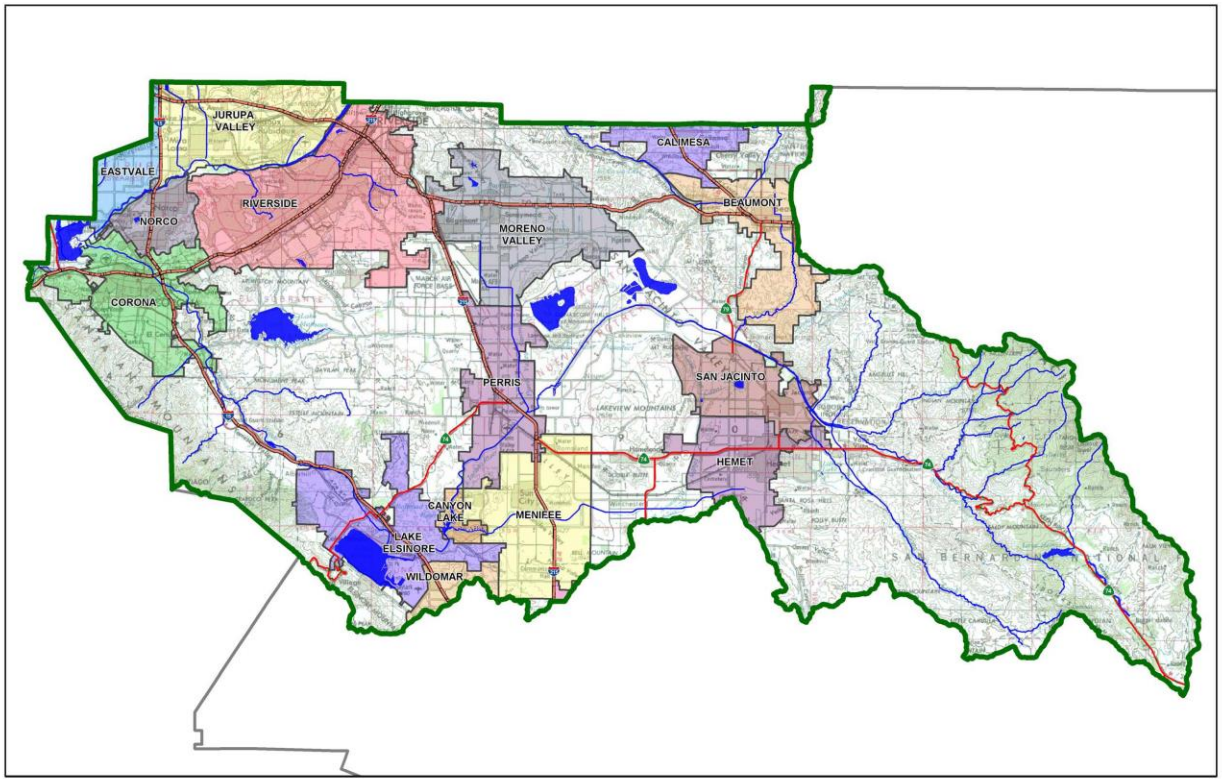
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Menifee Industrial 3

Development No: TBD

Design Review/Case No: TBD, APN: 331-060-018



☒ **Preliminary**
☐ **Final**

Original Date Prepared: June 27, 2022

Revision Date(s): 11-22-2022, 10-25-.2023

Prepared for Compliance with
Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

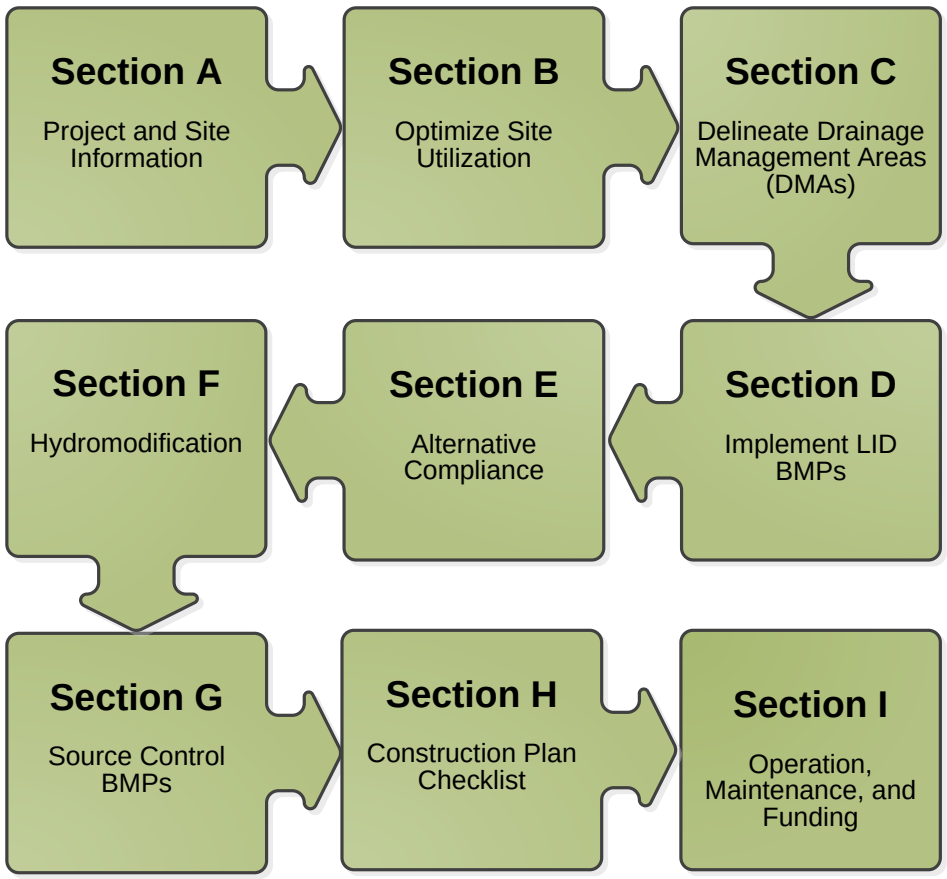
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Attn: Michael Gentile, PE

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 Mark Bachli by CASC Engineering and Consulting for the Menifee Industrial 3 Project.

This WQMP is intended to comply with the requirements of Riverside County for Ordinance No. 754.2 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 Riverside County Water Quality Ordinance (Municipal Code Section 13.12).

"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
Mark Bachli	
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
Michael J. Gentile PE, QSD/P	Senior Engineer
Preparer's Printed Name	Preparer's Title/Position

Preparer's Licensure: C58953

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Section A: Project and Site Information

PROJECT INFORMATION	
Type of Project:	Industrial
Planning Area:	N/A
Community Name:	Menifee
Development Name:	Menifee Industrial 3
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°44'31.33"N 117°11'48.17"W	
Project Watershed and Sub-Watershed: Santa Ana & San Jacinto	
Gross Acres: 6.79 Acres APN(s): 331-060-018 Map Book and Page No.: MB 15/77	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Industrial
Proposed or Potential SIC Code(s)	1541
Area of Impervious Project Footprint (SF)	295,825 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	253,825 SF
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)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
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)	N/A
What is the Water Quality Design Storm Depth for the project?	0.60"

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.

Project Description:.

The Menifee Industrial 3 Project is located in the City of Menifee, County of Riverside, California. The site is located at the southeast corner the intersection of Evans Road and Ethanac Road in the City of Menifee. The site is bounded by vacant land to the south, Evans Road to the west, Ethanac Road to the north, and the Riverside County Flood Control Channel to the east. The industrial Project and associated parking and landscaping areas are approximately 6.79 acres in size. Topographically, site elevations range from approximately 1422.00 feet to 1419.00 feet above Mean Sea Level (MSL). The site generally drains in a sheet flow manner from southeast to northwest toward the intersection of Evans Road and Ethenac Road.

APN 331-060-018 is currently undeveloped. The project proposes to construct an industrial warehouse building with associated parking, landscape, and access points. The project will add approximately 253,825 square feet or roughly six (6) acres of impervious area.

The proposed design consists of one on-site Drainage Area (DA1). Within the Drainage Area there is a proposed building of 138,534 sf and associated parking and landscaping. The Drainage Area will drain via sheet flow and/or curbs and gutters to proposed drop inlets located throughout the project. Flows captured by the drop inlet will be directed via proposed storm drain to proposed underground detention chambers. The chambers will dewater via proposed storm drains that will connect to proposed sump and pumps. The sump and pumps will pump flows to the proposed Modular Wetlands Systems (MWS), the treated flows will be conveyed by a proposed storm drain along the westerly side of the site that will connect to the on-site overflow drain that discharges into the proposed catch basin on Evans Road.

In addition to the on-site drainage area, a portion of the lot south of the project site will contribute runoff that will commingle with the runoff from DA1. This area is labeled DA2 on the WQMP site plan and is 1.29 acres of undeveloped land. Runoff from this area will be collected in the proposed underground detention chambers and discharged as described above.

Runoff from the area labeled DA3 on the WQMP site plan will be diverted by a proposed concrete channel to Evans Road and will not commingle with the on-site drainage. Area DA3 is considered self-treating.

The proposed off-site street improvements will consist of curb, gutters, under sidewalk drains, street expansion and road pavements. The proposed off-site street improvements along Evans Road and Ethanac Road are labeled as DA4. DA4 is 1.43 acres and will be treated by a MWS located on Evans Road.

The proposed project will be fully addressed by LID Principles and a Modular Wetlands System (MWS).

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
Canyon Lake	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, COMM, WARM, WILD	N/A
Lake Elsinore	Nutrients, Organic Enrichments, Low Dissolved Oxygen, PCBs, Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD, MUN	N/A

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)*	☐ 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?

Yes, the preexisting site conditions drained towards the northwest toward Evans Road and Ethanac Road. The planned grading will keep the same drainage pattern by conveying flows to the proposed BMPs, and discharge them into the proposed catch basin in Evans Road.

Did you identify and protect existing vegetation? If so, how? If not, why?

No, the site was previously mass graded and contains little to no vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

No, per the Geotechnical Report (Appendix 3) infiltration rates did not meet the BMP criteria, and therefore infiltration was determined to be infeasible. Per the BMP hierarchy in the Guidance Manual, and per a

letter from the geotechnical engineer stating infiltration rates were too low for bioretention, a Modular Wetlands System was selected for treatment on-site.

Did you identify and minimize impervious area? If so, how? If not, why?

No, the project proposes a large industrial large building and multiple parking lots so impervious area could not be minimized. Landscaped areas were added along the perimeter of the project site.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

No, due to the site being approximately 90% impervious dispersing runoff to pervious areas is infeasible and therefore flow through biotreatment BMPs were selected.

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 1A	Landscaping	41,948	Type D
DMA 1B	Buildings/Roofs	138,534	Type D
DMA 1C	Asphalt Concrete	115,291	Type D
DA2	Undeveloped	56,192	Type D
DA3	Undeveloped	119,354	Type A
DA4	Streets/Landscaping	62,291	Type 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)
DA 3	119,354	None	None

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]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

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			
	[A]		[B]	[C] = [A] x [B]	DMA name /ID	[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1A	MWS 1
DMA 1B	MWS 1
DMA 1C	MWS 1
DA2	MWS 1
DA4	MWS 2

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: all DMAs		
…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: 0.96 Acres

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

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: 5.83 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: 0.79

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: 4.61 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)
4.61 Acres	0.67 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: 172

Project Type: Industrial

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: 5.83 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: 172

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: 6063

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)
6063	172

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.

N/A

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: N/A

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: N/A

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: N/A

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: N/A

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)**
N/A	N/A

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 1A	☐	☐	☐	☒	☐
DMA 1B	☐	☐	☐	☒	☐
DMA 1C	☐	☐	☐	☒	☐
DA2	☐	☐	☐	☒	☐
DA4	☐	☐	☐	☒	☐

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.

*Per the letter Dated February 14, 2022 from the Geotechnical Study, an infiltration rate of 0.05 and 0.21 inches per hour should be used. See Appendix 3 for clarification. Therefore, biotreatment is deemed feasible.

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 Imperious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP 1 – MWS 1*		
	[A]		[B]	[C]	[A] x [C]			
DMA 1A	*41,948*	*Ornamental Landscaping*	*0.1*	*0.11*	*4,633.5*	*Design Storm Depth (in.)*	*Design capture Volume, **VBMP** (cubic feet)*	*Proposed Volume on plans (cubic feet)*
DMA 1B	*138,534*	*Buildings/ Roofs*	*1.0*	*0.89*	123,572.3			
DMA 1C	*115,291*	*Asphalt Concrete*	*1.0*	*0.89*	*102,139.6*			
DA 2	*56,192*	*Natural (C Soil)*	*0.3*	*0.23*	*12,652.5*			
	351,965				243,697.9	0.60	12,184.9	***42,299***

[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

DMA Type/ID	DMA Area (square feet)	Post-Project Surface Type	Effective Imperious Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*BMP 1 – MWS 2*		
	[A]		[B]	[C]	[A] x [C]			
DA4	*62291*	*Streets/Landscaping*	*0.81*	*0.61*	*38069.7*	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
	62291				38069.7	0.20	0.2	***0.206***

[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

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.

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]
N/A		

[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	N/A	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	N/A	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:

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.

Underground detention chambers will be utilized to contain runoff and slowly release runoff via pump & modular wetlands system for the Drainage Area. Proposed conditions will mimic pre-existing conditions by utilization of the detention chambers and pump. See Appendix 7.

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 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	Interior floor drains will be plumbed to sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.
D2. Landscape / Outdoor Pesticide Use	Landscape plans will 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. Pest-resistant plans will be used adjacent to hardscape. The landscape plans will consider plants appropriate to the site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain landscaping only using minimum pesticides, when needed. See Appendix 10 for "Landscape and Gardening" brochure by RCFlood. Provide Integrated Pest Management (IPM) information to new owners, lessees and operators upon occupancy and annually thereafter. IPM is an effective and environmentally sensitive approach to pest management.
G. Refuse Areas	Site refuse will be handled by contractor on a weekly basis. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	A minimum of two receptacles will be provided and located indoors. Receptacles are to be inspected daily and repairs or replacements to leaky receptacles will be completed immediately. Receptacles are to remain covered when not in use. Dumping of liquid or hazardous wastes is prohibited. A "no hazardous materials" sign will be posted. Spills will be cleaned immediately upon discovery. Spill control materials will be available onsite. See Appendix 10 for CASQA fact sheet SC-34 for "Waste Handling and Disposal."

H. Industrial processes	All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.	See Appendix 10 for CASQA fact sheet SC-10 for "Non-Stormwater Discharges"
M. Loading Docks		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
O. Miscellaneous Drain or Wash Water or Other Sources Condensate Drain lines Roofing, gutters, and trim Drainage Sumps	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. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff. Any drainage sumps on-site shall feature a sediment sump to reduce the quantity of sediment in pumped water.	
P. Plazas, sidewalks, and parking lots		Sweep plazas, sidewalks, and parking lots monthly 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)
1	MWS	C-1	33.741607°, -117.196681°
2	MWS	C-1	33.741875°, -117.197602°

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.

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: Maintenance will be funded by owner. A complete maintenance agreement will be submitted with FWQMP.

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

REGIONAL VICINITY MAP





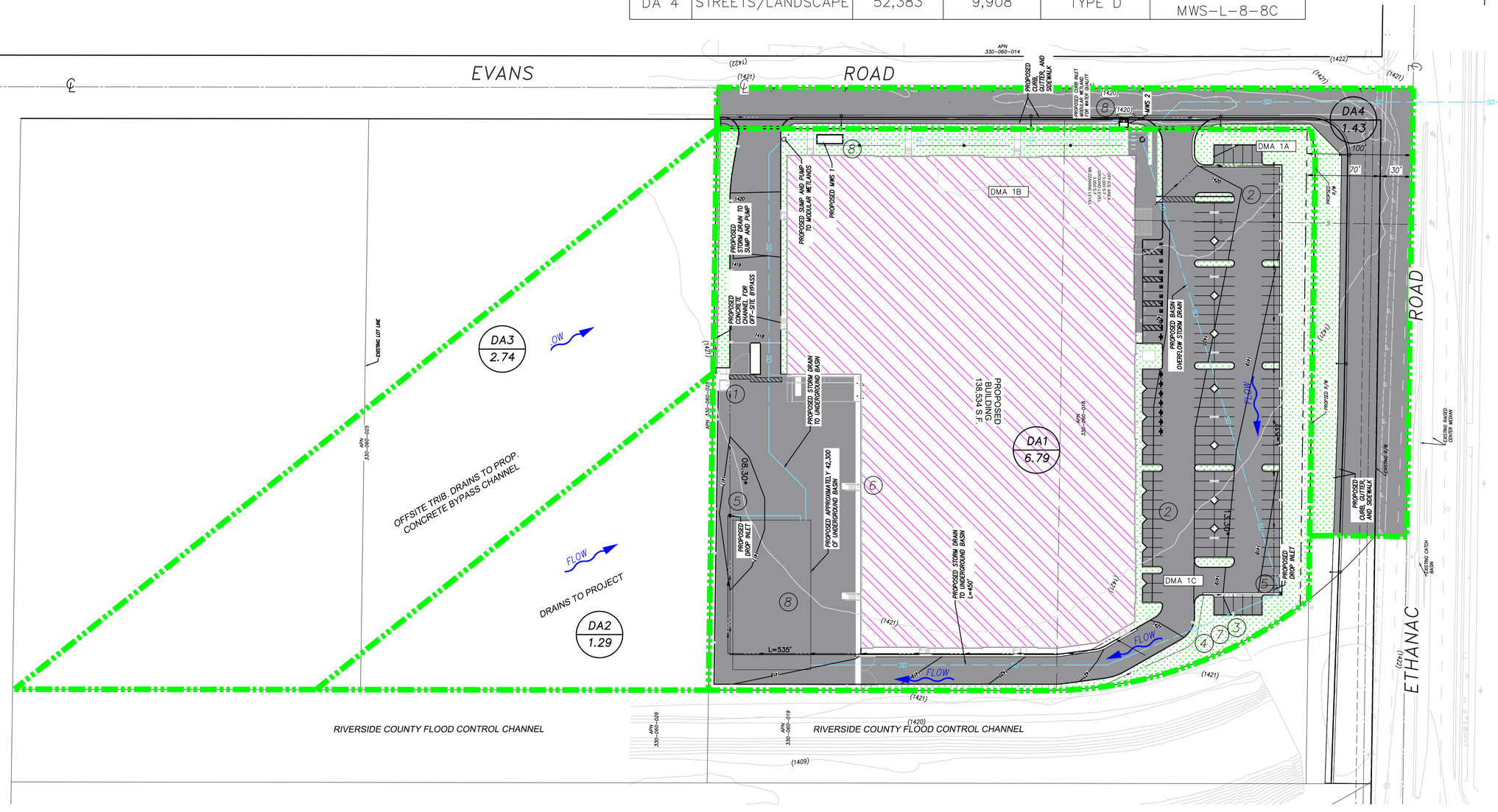
RECEIVING WATERS MAP



SD-13 DETAIL

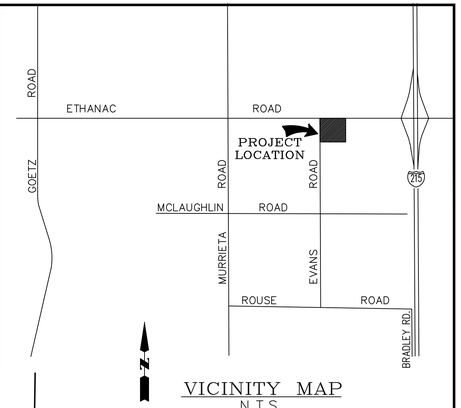
5 NOT TO SCALE

DMA CLASSIFICATIONS					
DMA NAME	SURFACE TYPE	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	DMA TYPE	BMP TYPE
DMA 1A	LANDSCAPING	0	41,948	TYPE D	BIOTREATMENT MWS-L-8-24-V
DMA 1B	BUILDINGS/ROOFS	138,534	0		
DMA 1C	ASPHALT CONCRETE	115,291	0		
DA2	NATURAL (C SOIL)	0	56,192	TYPE D	BIOTREATMENT MWS-L-8-24-V
DA3	NATURAL (C SOIL)	0	119,354	TYPE A	SELF TREATING
DA 4	STREETS/LANDSCAPE	52,383	9,908	TYPE D	BIOTREATMENT MWS-L-8-8C



DESIGN CAPTURE VOLUME: 12,185 CF.
UNDERGROUND DETENTION CHAMBER VOL. = 42,299 CF.

GRAPHIC SCALE
50 0 25 50 100
1" = 50'



VICINITY MAP
N.T.S.

SOURCE CONTROL BMPs

1	SD-32	TRASH ENCLOSURES
2	SC-71	PARKING LOT CLEANING
3	SC-73	LANDSCAPE MAINTENANCE
4	SD-12	EFFICIENT IRRIGATION
5	SD-13	STORM DRAIN SIGNAGE
6	SD-30	LOADING DOCKS
7	N-3	LANDSCAPE MANAGEMENT
8	N-4	BMP MAINTENANCE

LEGEND

- DMA — DRAINAGE MANAGEMENT AREA
- DRAINAGE AREA BOUNDARY
- STREET/PAVEMENT (IMPERVIOUS) AREA
- ROOFS / BUILDING (IMPERVIOUS)
- LANDSCAPE AREA
- FLOW — FLOW DIRECTION
- DA / X.XX — DRAINAGE AREA / ACRES

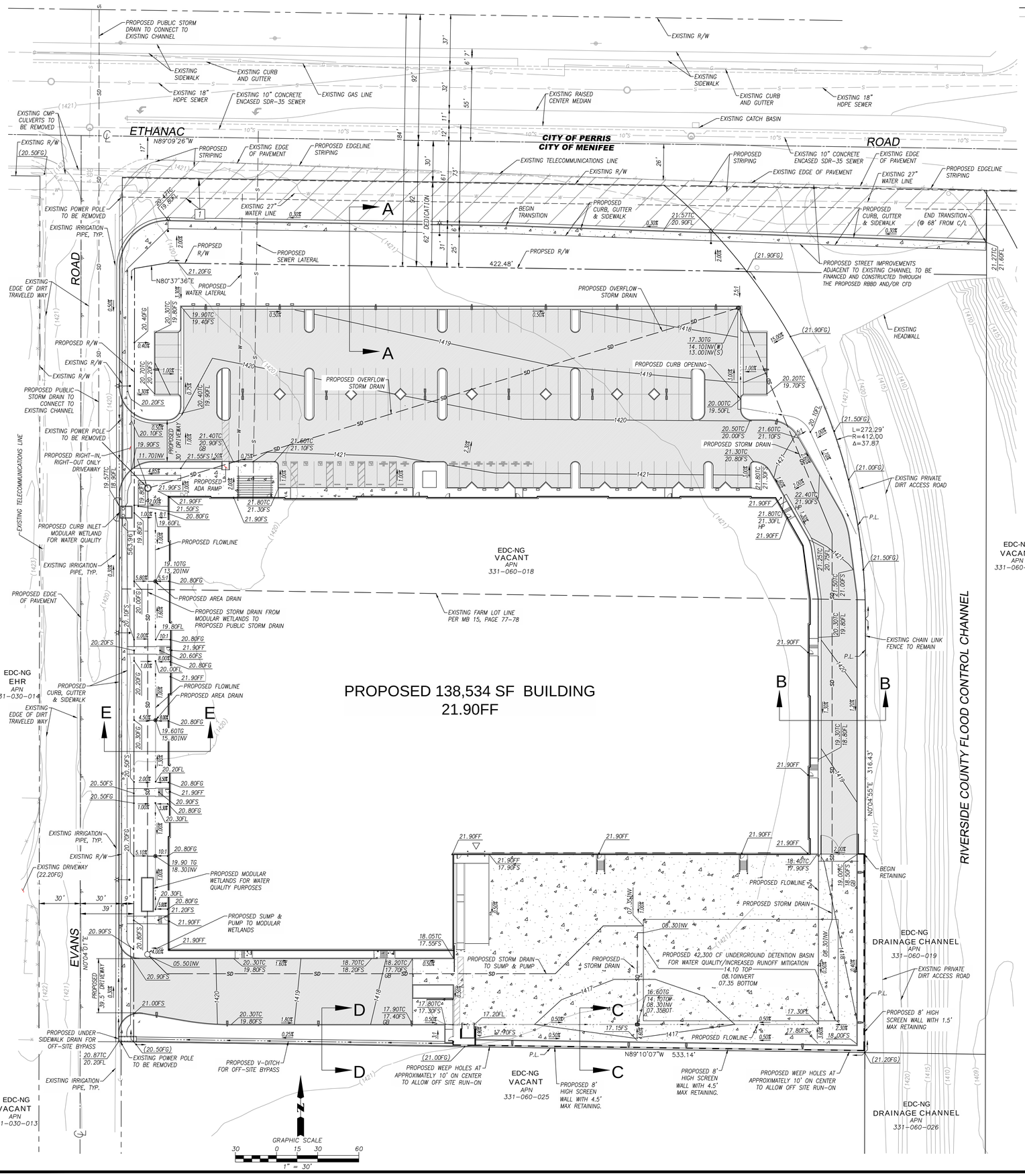
WQMP SITE MAP
MENIFEE INDUSTRIAL NO. 3

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-cosc.com

Drawing Name: G:\1494-0013 CORE, Evans Road Menifee #4\WQS\P-WQMP\CAD\1494-0013 WQMP SITE MAP -kj - Copy.dwg
Last Opened: Oct 25, 2023 - 3:07pm by kjmartinez

Appendix 2: Construction Plans

Grading and Drainage Plans



LEGEND

1330	PROPOSED CONTOUR
(1330)	EXISTING CONTOUR
2.30%	PROPOSED GRADE
℄	CENTERLINE
HP	HIGH POINT
R/W	RIGHT OF WAY
P.L.	PROPERTY LINE
GB	GRADE BREAK
TC	TOP OF CURB
TG	TOP OF GRATE
FS	FINISH SURFACE
FL	FLOWLINE
XX.XX	PROPOSED ELEVATION
(XX.XX)	EXISTING ELEVATION
EHR	EXISTING HORSE RANCH
EDC-NG	ECONOMIC DEVELOPMENT CORRIDOR–NORTHERN GATEWAY
	PROPOSED PCC PAVING
	PROPOSED AC PAVING
	PROPOSED STREET LIGHT
	PROPOSED LIGHT PER ARCHITECT'S PLAN

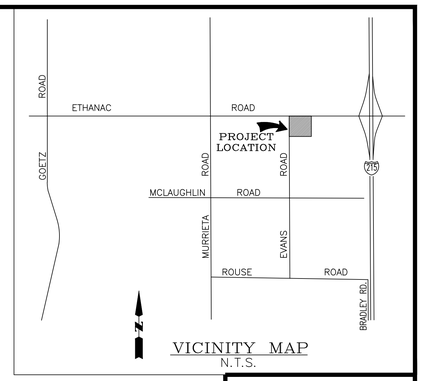
UTILITY NOTIFICATION

FRONTIER COMMUNICATIONS
9 S. 4TH STREET
REDLANDS, CA 92373
PHONE: (909) 748-6676

SOUTHERN CALIFORNIA GAS COMPANY
1981 WEST LUGONIA AVENUE
REDLANDS, CA 92373
PHONE: (909) 335-7550

SOUTHERN CALIFORNIA EDISON
26100 MENIFEE ROAD
ROMOLAND, CA 92585
PHONE: (951) 928-8334

EASTERN MUNICIPAL WATER DISTRICT
2270 TRUMBLE ROAD
PERRIS, CA 92572
PHONE: (951) 928-3777



VICINITY MAP
N.T.S.

GENERAL NOTES

1. ASSESSOR'S PARCEL NUMBER: 331-060-018
2. EXISTING GROSS AREA: 327,656 SF = 7.52 AC
3. EXISTING NET USABLE AREA: 321,806 SF = 7.39 AC
4. PROPOSED GROSS AREA: 295,988 SF = 6.79 AC
5. PROPOSED NET USABLE AREA: 295,988 SF = 6.79 AC
6. PROPOSED STREET DEDICATION AREA: 31,668 SF = 0.73 AC
7. EXISTING ZONE DESIGNATION: ECONOMIC DEVELOPMENT CORRIDOR-NORTHERN GATEWAY
8. PROPOSED ZONE DESIGNATION: ECONOMIC DEVELOPMENT CORRIDOR-NORTHERN GATEWAY
9. EXISTING LAND USE: VACANT
10. PROPOSED LAND USE: WAREHOUSE / OFFICE
11. PROJECT SITE IS LOCATED WITHIN ZONE "X" - 'AREAS OF 0.2% ANNUAL CHANCE FLOOD' AS PER FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 06065C2055H, DATED AUGUST 18, 2014.*
12. THE LAND IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
13. THE SITE HAS VERY LOW POTENTIAL FOR LIQUEFACTION.
14. SITE IS LOCATED WITHIN AN ADDITIONAL SURVEY AREA FOR BURROWING OWLS.
15. SITE IS NOT LOCATED IN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.

ESTIMATED RAW EARTHWORK QUANTITIES

BASE SURFACE:	1494-0013 EG
COMPARISON SURFACE:	1494-0013 PR
CUT VOLUME (UNADJUSTED)	8,600 CU. YD.
FILL VOLUME (UNADJUSTED)	7,900 CU. YD.

NOTE: SITE IS EXPECTED TO BALANCE AFTER LOSSES.

LEGAL DESCRIPTION

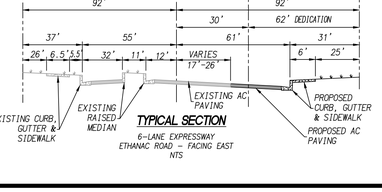
LOTS 1228 AND 1229 OF ROMOLA FARMS NO. 12 AS SHOWN BY MAP ON FILE IN BOOK 15, PAGES 77 AND 78 OF MAPS, RECORD OF RIVERSIDE COUNTY, CALIFORNIA.
EXCEPTING THEREFROM THAT PORTION CONDEMNED IN FEE AND DESCRIBED AS DISTRICT PARCEL NUMBER 4310-4A IN THAT CERTAIN FINA JUDGEMENT IN CONDEMNATION RECORDED JUNE09, 2010 AS INSTRUMENT NO. 2010-0266368 AND FINAL ORDER OF CONDEMNATION RECORDED AUGUST 25,2010 AS INSTRUMENT NO. 2010-0405363, BOTH OF OFFICIAL RECORDS.

EASEMENTS

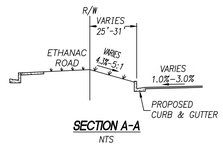
1. AN EASEMENT FOR PIPE LINES AND INCIDENTAL PURPOSES, RECORDED MAY 13, 1963 IN BOOK 3392, PAGE 306 OF OFFICIAL RECORDS.
IN FAVOR OF: EASTERN MUNICIPAL WATER DISTRICT
AFFECTS: AS DESCRIBED THEREIN

SOURCE OF SURVEY

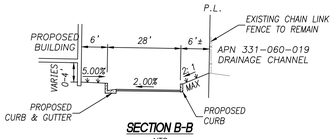
ALTA SURVEY
DATED JANUARY 2022
AS CONDUCTED BY
J.D. COLE & ASSOCIATES
11056 RAMONA STREET
YUCAIPA, CA 92399
PHONE: (909) 797-2074



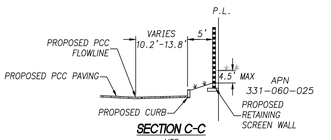
TYPICAL SECTION
6-LANE EXPRESSWAY
ETHANAC ROAD – FACING EAST
NTS



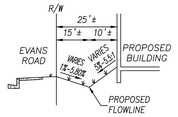
SECTION A-A
NTS



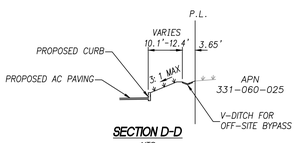
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NTS



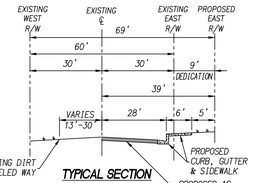
SECTION C-C
NTS



SECTION E-E
NTS



SECTION D-D
NTS



TYPICAL SECTION
MODIFIED INDUSTRIAL COLLECTOR
EVANS ROAD – FACING NORTH
NTS

BENCHMARK

SURVEY DISK SET IN TOP OF CONCRETE MONUMENT STAMPED 600-31-68 LOCATED 700' NORTH OF INTERSECTION OF MURRIETA ROAD AND ETHANAC ROAD WITH ROAD, 3' NORTHEAST OF THE SOUTHEAST CORNER OF AN 8' CHAIN LINK FENCE AT A LOCATION 16' WEST OF THE CENTERLINE, 2' SOUTH OF A MARKER POST.
ELEVATION 1416.90' NAVD88

BASIS OF BEARING

CENTERLINE OF ETHANAC ROAD
BEING N89°09'26"W PER RS 141/52-53

CGP

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cascinc.com

CONCEPTUAL GRADING PLAN

MENIFEE INDUSTRIAL 3

CDRE HOLDINGS 25 LLC
APN 331-060-018
CITY OF MENIFEE

SEALS:

REGISTERED PROFESSIONAL ENGINEER PATRICK C. T. LAMAGAN JR. NO. C 086046 CIVIL STATE OF CALIFORNIA

PREPARED FOR/APPLICANT:
CDRE HOLDINGS 25 LLC
ATTN: MARK BAGHAI
999 N. PACIFIC COAST HIGHWAY, SUITE 580
EL SEGUNDO, CA 90245
(310) 428-3302

PROPERTY OWNER:
JOONG H. CHOH AND SOOK P. CHOH & JAE E. HAN, TRUSTEE OF THE JAE E. HAN TRUST NO. 1, DATED OCTOBER 31, 1994
ATTN: MARK BAGHAI
999 N. PACIFIC COAST HIGHWAY, SUITE 580
EL SEGUNDO, CA 90245
(310) 428-3302

D:\5454-0013 CDRE, Evans Road Menifee #1\Engineering\Conceptual Grading Plan\5454-0013 CGP.dwg 10/25/23 16:00

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

PRELIMINARY GEOTECHNICAL AND INFILTRATION FEASIBILITY INVESTIGATION PROPOSED INDUSTRIAL DEVELOPMENT APN 331-060-018 MENIFEE, CALIFORNIA

PROJECT NO. 23798.1
MAY 12, 2022

Prepared For:

Compass Danbe Real Estate Partners II, LLC
999 N. Pacific Coast Highway
El Segundo, California 90245

Attention: Mr. Mark Bachli

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

May 12, 2022

Compass Danbe Real Estate Partners II, LLC
999 N. Pacific Coast Highway
El Segundo, California 90245

Project No. 23798.1

Attention: Mr. Mark Bachli

Subject: Preliminary Geotechnical and Infiltration Feasibility Investigation, Proposed Industrial Development, APN 331-060-018, Menifee, California.

LOR Geotechnical Group, Inc., is pleased to present this report of our geotechnical investigation for the subject project. In summary, it is our opinion that the proposed development is feasible from a geotechnical perspective, provided the recommendations presented in the attached report are incorporated into design and construction. However, the contents of this summary should not be solely relied upon.

To provide adequate support for the proposed structures, we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. Any undocumented fill material and any loose older alluvial materials should be removed from structural areas and areas to receive engineered compacted fills. The data developed during this investigation indicates that removals on the order of approximately 3 to 5 feet will be required from currently planned development areas. The given removal depths are preliminary and the actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Very low expansion potential, moderate R-value quality, and negligible soluble sulfate content generally characterize the onsite materials tested. Near completion and/or at the completion of site grading, additional foundation and subgrade soils should be tested, as necessary, to verify their expansion potential, soluble sulfate content, and R-value quality.

Non-conducive infiltration rates were obtained for the soils tested.

LOR Geotechnical Group, Inc.

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INTRODUCTION

During April and May of 2022, a Preliminary Geotechnical and Infiltration Feasibility Investigation was performed by LOR Geotechnical Group, Inc., for the proposed industrial development of Assessor's Parcel Number (APN) 331-060-018, Menifee, California. The purpose of this investigation was to provide a technical evaluation of the geologic setting of the site and to provide geotechnical design recommendations for the proposed development. The scope of our services included:

- Review of available geotechnical literature, reports, maps, and agency information pertinent to the study area;
- Interpretation of aerial photographs of the site and surrounding regions dated 1966 through 2021;
- Geologic field reconnaissance mapping to verify the aerial distribution of earth units and significance of surficial features as compiled from documents, literature, and reports reviewed;
- A subsurface field investigation to determine the physical soil conditions pertinent to the proposed development;
- Percolation testing via the borehole test method;
- Laboratory testing of selected soil samples obtained during the field investigation;
- Development of geotechnical recommendations for site grading and foundation design; and
- Preparation of this report summarizing our findings, and providing conclusions and recommendations for site development.

The approximate location of the site is shown on the attached Index Map, Enclosure A-1, within Appendix A.

PROJECT CONSIDERATIONS

To orient our investigation at the site, an Alta Survey prepared by J.D. Cole and Associates, Inc., dated January 30, 2022, was furnished for our use. The existing site conditions and proposed building configurations, associated driveways, parking, and landscape areas were indicated on this plan. Also provided was a Site Plan prepared by Herdman Architecture + Design, dated April 19, 2022. These plans were utilized as base

maps for our field investigation and are presented as Enclosures A-2a and A-2b, respectively, within Appendix A. As noted on the Site Plan, development of the site will include an industrial type structure comprising 131,918± square foot building with the remainder of the property to be used for driveways, parking, and landscape areas. The building is anticipated to be of concrete, masonry, or similar type construction and light to moderate foundation loads are anticipated with these structures.

Infiltration is proposed via underground chamber type systems. Depths and locations were provided by CASC Engineering and Consulting.

Grading plans have not yet been developed. However, based on the current topography of the site and adjacent areas, minor cuts and fills are anticipated to create level surfaces for the proposed development.

AERIAL PHOTO ANALYSIS

The aerial photographs reviewed consisted of vertical aerial photograph images of varying scales. We reviewed imagery available from Google Earth Pro (2022) computer software and from online Historic Aerials (2022).

To summarize briefly, the site was vacant land utilized for farming since 1966, the earliest photograph available, to current day. No evidence for the presence of faults traversing the site area or mass movement features was noted during our review of the photographs covering the site and nearby vicinity.

EXISTING SITE CONDITIONS

The approximate 6.8-acre site is located at the southeast corner of Ethanac Road and Evans Road in the city of Menifee, California. It consists of vacant land partially used for farming within the southern one-sixth in conjunction with the adjacent property to the south. Some manure was present spread out over the northern five-sixths of the site. Topographically, the site is planar with a gentle fall to the west-northwest.

Ethanac Road, a fully improved roadway, lies north of the site with vacant land beyond. Evans Road, a dirt roadway lies west of the site with a horse ranch beyond. An unlined earthen channel bounds the site on the east followed by vacant land. Vacant farm land lies south of the site.

SUBSURFACE FIELD INVESTIGATION

Our subsurface field exploration program was conducted on April 21, 2022. The work consisted of advancing a total of 6 exploratory borings and 2 percolation test holes using a truck-mounted drill rig equipped with 8-inch diameter hollow stem augers. The approximate locations of our exploratory borings are presented on Enclosure A-2, within Appendix A.

The subsurface conditions encountered in the exploratory borings were logged by a geologist from this firm. The borings were drilled to maximum depths of 11.5 to 51.5 feet below the existing ground surface. Relatively undisturbed and bulk samples were obtained at a maximum depth interval of 5 feet, and returned to our geotechnical laboratory in sealed containers for further testing and evaluation.

A detailed description of the subsurface field exploration program and the boring logs is presented in Appendix B.

LABORATORY TESTING PROGRAM

Selected soil samples obtained during the field investigation were subjected to geotechnical laboratory testing to evaluate their physical and engineering properties. Laboratory testing included in-place moisture content and dry density, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, expansion index, swell, and soluble sulfate content. A detailed description of the geotechnical laboratory testing program and the test results are presented in Appendix C.

GEOLOGIC CONDITIONS

Regional Geologic Setting

As shown on Enclosure A-1, within Appendix A, the site is located within the United States Geological Survey Romoland 7.5 minute quadrangle topographic map. This region lies along the north-central portion of the Perris block of the northern Peninsular Ranges geologic province of southern California. While the Perris block is considered to be a relatively stable structural block, it is bounded by active faults. These include the Elsinore fault zone on the west, the San Jacinto fault zone on the east, and the Cucamonga fault zone on the north. The Perris block is underlain by rocks of the Peninsular Ranges batholith, a very large mass of crystalline igneous rocks of Cretaceous age and with no known floor, and by prebatholithic metasedimentary and metavolcanic rocks of older ages.

The Perris block has a series of erosional surfaces, marked by low topographic relief and capped with unconsolidated alluvial sediments stripped from the surrounding highlands. This area was mapped by the California Division of Mines and Geology as being underlain by deposits of old alluvial fan deposits (Morton, 2003).

The interior of the Perris Plain is considered to be relatively stable with few known active faults. However, this plain is bounded by active faults. These include the Elsinore fault zone on the west, the San Jacinto fault zone on the northeast, the San Andreas fault zone on the north, and the Agua-Tibia fault zone on the south. As the subject site is located near the western margin of the Perris Plain, the Elsinore fault is the closest known active fault in relation to the site. At its closest approach, the Elsinore fault is located approximately 14.6 kilometers (9.1 miles) southwest from the site. A complete listing of the distances to known active faults in relation to the various planning areas is given in the Faulting section of this report.

The site is shown within the regional geologic setting as mapped by the U.S.G.S. on the enclosed Regional Geologic Map, Enclosure A-3, within Appendix A.

Site Geologic Conditions

Fill/Topsoil: Fill/topsoil materials were encountered within our exploratory borings to depths of approximately 2 feet. The fill/topsoil materials are believed to be associated with current and past agricultural practices (discing) at the site. As encountered, the fill/topsoil materials were comprised of silty sand which were predominantly brown, dry, and in a loose state. Some manure was noted at the surface.

Older Alluvium: Older alluvial materials were encountered underlying the fill materials described above within all of our exploratory borings. The older alluvial soils were encountered to the maximum depth explored of approximately 51.5 feet. These units were noted to mainly consist of clayey sand, sandy silt, silty sand, lean clay with sand and minor units of poorly graded sand and well graded sand. The older alluvial materials were in a relatively dense/hard to very dense/very hard state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing. Swell testing indicates that the fine grained, lean clay with sand materials will have a very low expansion potential in their natural state.

A detailed description of the subsurface soil conditions as encountered within our exploratory borings, is presented on the Boring Logs within Appendix B.

Groundwater Hydrology

Groundwater was not encountered within any of our exploratory borings as advanced to a maximum depth of approximately 51.5 feet below the existing ground surface nor was any groundwater seepage observed during our site reconnaissance.

In order to estimate the approximate depth to groundwater in the site area, a search was conducted for local groundwater (well) level measurements within the Cooperative Well Measuring Program, Spring 2021 (Watermaster Support Services et al., 2021). This database contains depth to groundwater measurements dating back to 1993. We also conducted a search of the water well database information provided in the California Department of Water Resources (CDWR) Water Library Data website (CDWR, 2022).

The closest well is an Eastern Municipal Water District (EMWD) well, State Well No. 05S03W16K001S (Well "EMWD14429"), located approximately 0.4 mile to the south-southwest of the subject property. Groundwater level data for this well was limited to one reading in October 2021. A measuring point elevation of 1,425± feet above mean sea level was reported. The depth to groundwater from the measuring point was approximately 62 feet. Two other wells are located within approximately 0.6 mile of the subject property. One of these wells, State Well No. 05S03W17A001S, located west-southwest of the subject property, has groundwater level data limited to one reading in 1995. A measuring point elevation of 1,424± feet above mean sea level was reported. The depth to groundwater provided was 22 feet. The second of these wells, Well "EMWD12765", located south-southwest of the subject property, has groundwater level data ranging from October 2011 to October 2012. A measuring point elevation of 1,428± feet above mean sea level was reported. The depth to groundwater from the measuring point has ranged from approximately 66 to 70 feet.

As noted on Enclosure A-2, the lowest elevation of the site is 1,418 feet above mean sea level. Based on the information above, groundwater in the region appears to be at depths on the order of 50 to 60 feet below the ground surface.

Mass Movement

The site lies on a relatively flat surface. The occurrence of mass movement failures such as landslides, rockfalls, or debris flows within such areas is generally not considered common, and no evidence of mass movement was observed on the site.

Faulting

No active or potentially active faults are known to exist at the subject site. In addition, the subject site does not lie within a current State of California Earthquake Fault Zone (Hart and Bryant, 2003) nor does the site lie within a County of Riverside fault zone (CRTLMA, 2021). No evidence of faulting projecting into or crossing the site was noted during our aerial photograph review or our review of published geologic maps.

As previously mentioned, the closest known active earthquake fault with a documented location is the Elsinore fault located approximately 14.6 kilometers (9.1 miles) to the southwest. In addition, other relatively close active faults include the San Jacinto fault located approximately 16.5 kilometers (10.2 miles) to the northeast, and the San Andreas fault located approximately 39.5 kilometers (25.5 miles) to the northeast.

The Elsinore fault zone is one of the largest in southern California. At its northern end it splays into two segments and at its southern end it is cut by the Yuba Wells fault. The primary sense of slip along the Elsinore fault is right lateral strike-slip. It is believed that the Elsinore fault zone is capable of producing an earthquake magnitude on the order of 6.5 to 7.5.

The San Jacinto fault zone is a sub-parallel branch of the San Andreas fault zone, extending from the northwestern San Bernardino area, southward into the El Centro region. This fault has been active in recent times with several large magnitude events. It is believed that the San Jacinto fault is capable of producing an earthquake magnitude on the order of 6.5 or larger.

The San Andreas fault is considered to be the major tectonic feature of California, separating the Pacific Plate and the North American Plate. While estimates vary, the San Andreas fault is generally thought to have an average slip rate on the order of 24mm/yr and capable of generating large magnitude events on the order of 7.5.

Current standards of practice included a discussion of all potential earthquake sources within a 100 kilometer (62 mile) radius. However, while there are other large earthquake faults within a 100 kilometer (62-mile) radius of the site, none of these are considered as relevant to the site as the faults described above, due to their closer distance and larger anticipated magnitudes.

Historical Seismicity

In order to obtain a general perspective of the historical seismicity of the site and surrounding region a search was conducted for seismic events at and around the area within various radii. This search was conducted utilizing the historical seismic search website of the U.S.G.S. (2021). This website conducts a search of a user selected cataloged seismic events database, within a specified radius and selected magnitudes, and then plots the events onto a map. At the time of our search, the database contained data from January 1, 1932 through May 9, 2022.

In our first search, the general seismicity of the region was analyzed by selecting an epicenter map listing all events of magnitude 4.0 and greater, recorded since 1932, within a 100 kilometer (62 mile) radius of the site, in accordance with guidelines of the California Division of Mines and Geology. This map illustrates the regional seismic history of moderate to large events. As depicted on Enclosure A-4, within Appendix A, the site lies within a relatively active region associated with the San Jacinto fault to the northeast.

In the second search, the micro seismicity of the area lying within a 15 kilometer (9.3 miles) radius of the site was examined by selecting an epicenter map listing events on the order of 1.0 and greater since 1978. In addition, only the “A” events, or most accurate events were selected. Caltech indicates the accuracy of the “A” events to be approximately 1 kilometer. The result of this search is a map that presents the seismic history around the area of the site with much greater detail, not permitted on the larger map. The reason for limiting the time period for the events on the detail map is to enhance the accuracy of the map. Events recorded prior to the mid to late1970's are generally considered to be less accurate due to advancements in technology. As depicted on this map, Enclosure A-5, the Elsinore fault zone to the southwest and the San Jacinto fault zone to the northeast appears to be the source of numerous events.

In summary, the historical seismicity of the site entails numerous small to medium magnitude earthquake events occurring in the region around the subject site. Any future developments at the subject site should anticipate that moderate to large seismic events could occur very near the site.

Secondary Seismic Hazards

Other secondary seismic hazards generally associated with severe ground shaking during an earthquake include liquefaction, seismic-induced settlement, seiches and tsunamis, earthquake induced flooding, landsliding, and rockfalls.

Liquefaction: The site lies within an area mapped by the County of Riverside has having a low potential for liquefaction (CRTLMA, 2022). The potential for liquefaction generally occurs during strong ground shaking within granular loose sediments where the groundwater is usually less than 50 feet below the ground surface. As found during this investigation, the site is underlain by dense/hard to very dense /very hard older alluvial soils in the upper 50 feet, therefore, the possibility of liquefaction at the site is considered nil.

Seiches/Tsunamis: The potential for the site to be affected by a seiche or tsunami (earthquake generated wave) is considered nil due to absence of any large bodies of water near the site.

Flooding (Water Storage Facility Failure): There are no large water storage facilities located on or near the site which could possibly rupture during in earthquake and affect the site by flooding.

Seismically-Induced Landsliding: Due to the low relief of the site and surrounding region, the potential for landslides to occur at the site is considered nil.

Rockfalls: No large, exposed, loose or unrooted boulders are present above the site that could affect the integrity of the site.

Seismically-Induced Settlement: Settlement generally occurs within areas of loose, granular soils with relatively low density. Since the site is underlain by relatively dense/stiff older alluvial materials and hard igneous bedrock, the potential for settlement is considered very low. In addition, the recommended earthwork operations to be conducted during the development of the site should mitigate any near surface loose soil conditions.

SOILS AND SEISMIC DESIGN CRITERIA (California Building Code 2019)

Design requirements for structures can be found within Chapter 16 of the 2019 California Building Code (CBC) based on building type, use, and/or occupancy. The classification of use and occupancy of all proposed structures at the site, shall be the responsibility of the building official.

Site Classification

Chapter 20 of the ASCE 7-16 defines six possible site classes for earth materials that underlie any given site. Bedrock is assigned one of three of these six site classes and

these are: A, B, or C. Soil is assigned as C, D, E, or F. Per ASCE 7-16, Site Class A and Site Class B shall be measured on-site or estimated by a geotechnical engineer, engineering geologist or seismologist for competent rock with moderate fracturing and weathering. Site Class A and Site Class B shall not be used if more than 10 feet of soil is between the rock surface and bottom of the spread footing or mat foundation. Site Class C can be used for very dense soil and soft rock with Ñ values greater than 50 blows per foot. Site Class D can be used for stiff soil with Ñ values ranging from 15 to 50 blows per foot. Site Class E is for soft clay soils with Ñ values less than 15 blows per foot. Our current investigation, mapping by others, and our experience in the site region indicates that the materials beneath the site are considered Site Class D stiff soil.

CBC Earthquake Design Summary

Earthquake design criteria have been formulated in accordance with the 2019 CBC and ASCE 7-16 for the site based on the results of our investigation to determine the Site Class and an assumed Risk Category II. However, these values should be reviewed and the final design should be performed by a qualified structural engineer familiar with the region. In addition, the building official should confirm the Risk Category utilized in our design (Risk Category II). Our design values are provided in Appendix D.

PERCOLATION TESTING AND INFILTRATION RATE RESULTS

Two borehole percolation tests were conducted in general accordance with the Shallow Percolation Test procedure as outlined in the Design Handbook for Low Impact Development Best Management Practices (CRFCWCD, 2011). The requested locations of our test are illustrated on Enclosure A-2. Test borings were drilled to depths of approximately 8 and 10 feet below the existing ground surface as requested, on April 21, 2022. Subsequent to drilling, a 3-inch diameter, perforated PVC pipe wrapped in filter fabric was placed within each test hole and 3/4-inch gravel was placed between the outside of the pipe and the hole wall. Test holes were pre-soaked the same day as drilling. Testing took place the next day, April 22, 2022, within 26 hours but not before 15 hours, of the pre-soak. The holes were filled with a variable height column of water using water from a 200 gallon water tank. Test periods consisted of allowing the water to drop in 30-minute intervals. After each reading, the hole was refilled. Testing was terminated after a total of 12 readings were recorded. The percolation test data was then converted to an infiltration rate using the Porchet Method.

Infiltration rate results are summarized in the following table:

Test No.	Depth*	Clear Water Infiltration Rate** (in/hr)
P-1	8	0.02
P-2	10	0.09

* Depth measured below existing ground surface.
** Porchet Method determined Infiltration rate with an effective diameter due to loss in volume of water due to gravel packing.

The results of this testing are presented as Enclosures E-1 and E-2 in Appendix E. The Infiltration rates indicate non-conducive infiltration characteristics for the materials tested.

CONCLUSIONS

This investigation provides a broad overview of the geotechnical and geologic factors which are expected to influence future site planning and development. On the basis of our field investigation and testing program, it is the opinion of LOR Geotechnical Group, Inc., that the proposed development of the site for the proposed use is feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into design and implemented during grading and construction.

It should be noted that the subsurface conditions encountered in our exploratory borings are indicative of the locations explored and the subsurface conditions may vary. If conditions are encountered during the construction of the project that differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided.

Foundation Support

To provide adequate support for the proposed structure we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. The construction of this compacted fill mat will allow for the removal of the existing fill material which was loose and any current subsurface improvements, such as utilities, foundations, etc., that may be present locally.

Conventional foundation systems utilizing either individual spread footings and/or continuous wall footings will provide adequate support for the anticipated downward and lateral loads when utilized in conjunction with the recommended fill mat.

Soil Expansiveness

Our expansion index testing of a representative sample of the on-site soils indicates a very low expansion potential. For very low expansive soils, specialized foundation design and construction procedures to resist expansive soil activity are not considered necessary.

Careful evaluation of onsite soils and any import fill for their expansion potential should be conducted during the grading operation.

Sulfate Protection

The results of the soluble sulfate tests conducted on selected subgrade soils expected to be encountered at foundation levels indicate that there is a negligible sulfate exposure to concrete elements in contact with the on site soils per the 2019 CBC. Therefore, no specific recommendations are given for concrete elements to be in contact with the onsite soils.

Infiltration

The results of our field investigation and percolation test data indicates the site soils at the depths tested are not conducive to infiltration. Based on the results of this investigation, acceptable infiltration is also not anticipated to occur at other depths due to the amount of silty/clayey fines and dense to very dense nature of the soils.

Geologic Mitigations

No special mitigation methods are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

Seismicity

Seismic ground rupture is generally considered most likely to occur along pre-existing active faults. Since no known faults are known to exist at, or project into the site, the probability of ground surface rupture occurring at the site is considered nil.

Due to the site's close proximity to the faults described above, it is reasonable to expect a relatively strong ground motion seismic event to occur during the lifetime of the proposed development on the site. Large earthquakes could occur on other faults in the general area, but because of their lesser anticipated magnitude and/or greater distance, they are considered less significant than the faults described above from a ground motion standpoint.

The effects of ground shaking anticipated at the subject site should be mitigated by the seismic design requirements and procedures outlined in Chapter 16 of the California Building Code. However, it should be noted that the current building code requires the minimum design to allow a structure to remain standing after a seismic event, in order to allow for safe evacuation. A structure built to code may still sustain damage which might ultimately result in the demolishing of the structure (Larson and Slosson, 1992).

No secondary seismic hazards are anticipated to impact the proposed development.

RECOMMENDATIONS

Geologic Recommendations

No special geologic recommendations are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

General Site Grading

It is imperative that no clearing and/or grading operations be performed without the presence of a qualified geotechnical engineer. An onsite, pre-job meeting with the developer, the contractor, the jurisdictional agency, and the geotechnical engineer should occur prior to all grading related operations.

Operations undertaken at the site without the geotechnical engineer present may result in exclusions of affected areas from the final compaction report for the project.

Grading of the subject site should be performed in accordance with the following recommendations as well as applicable portions of the California Building Code, and/or applicable local ordinances.

All areas to be graded should be stripped of significant vegetation and other deleterious materials.

Any undocumented fill encountered during grading should be completely removed, cleaned of significant deleterious materials, and may be reused as compacted fill. It is our recommendation that any existing fills under any proposed flatwork and paved areas be removed and replaced with engineered compacted fill. If this is not done, premature structural distress (settlement) of the flatwork and pavement may occur.

Cavities created by removal of subsurface obstructions should be thoroughly cleaned of loose soil, organic matter and other deleterious materials, shaped to provide access for construction equipment, and backfilled as recommended in the following Engineered Compacted Fill section of this report.

Initial Site Preparation

The existing fill/topsoil material, as well as any loose older alluvial soils, if encountered, should be removed from all proposed structural and/or fill areas. The data developed during this investigation indicates that removals on the order of 3 to 5 feet deep will be required from proposed development areas in order to encounter competent older alluvium upon which engineered compacted fill can be placed. The given removal depths are preliminary. Deeper fills may be present, primarily in areas of current improvements. Removals should expose older alluvial materials with an in-situ relative compaction of at least 85 percent (ASTM D 1557). The actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Preparation of Fill Areas

Prior to placing fill, the surfaces of all areas to receive fill should be scarified to a minimum depth of 6 inches. The scarified materials should be brought to near optimum moisture content and recompacted to a relative compaction of at least 90 percent (ASTM D 1557).

Engineered Compacted Fill

The onsite soils should provide adequate quality fill material, provided they are free from oversized and/or organic matter and other deleterious materials. Unless approved by the geotechnical engineer, rock or similar irreducible material with a maximum dimension greater than 6 inches should not be buried or placed in fills.

If required, import fill should be inorganic, non-expansive granular soils free from rocks or lumps greater than 6 inches in maximum dimension. Sources for import fill should be

approved by the geotechnical engineer prior to their use. Fill should be spread in maximum 8-inch uniform, loose lifts, each lift brought to near optimum moisture content, and compacted to a relative compaction of at least 90 percent in accordance with ASTM D 1557.

Preparation of Foundation Areas

All footings should rest upon at least 24 inches of properly compacted fill material placed over competent older alluvium. In areas where the required fill thickness is not accomplished by the recommended removals or by site rough grading, the footing areas should be further subexcavated to a depth of at least 24 inches below the proposed footing base grade, with the subexcavation extending at least 5 feet beyond the footing lines. The bottom of all excavations should be scarified to a depth of 12 inches, brought to near optimum moisture content, and recompacted to at least 90 percent relative compaction (ASTM D 1557) prior to the placement of compacted fill.

Concrete floor slabs should bear on a minimum of 24 inches of compacted soil. This should be accomplished by the recommendations provided above. The final pad surfaces should be rolled to provide smooth, dense surfaces upon which to place the concrete.

Short-Term Excavations

Following the California Occupational and Safety Health Act (CAL-OSHA) requirements, excavations 5 feet deep and greater should be sloped or shored. All excavations and shoring should conform to CAL-OSHA requirements. Short-term excavations of 5 feet deep and greater shall conform to Title 8 of the California Code of Regulations, Construction Safety Orders, Section 1504 and 1539 through 1547. Based upon the findings from our exploratory borings, it appears that Type C soils are the predominant type of soil on the project and all short-term excavations should be based on this type of soil.

Deviation from the standard short-term slopes are permitted using option 4, Design by a Registered Professional Engineer (Section 1541.1). Short-term excavation construction and maintenance are the responsibility of the contractor and should be a consideration of his methods of operation and the actual soil conditions encountered.

Slope Construction

Preliminary data indicates that cut and fill slopes should be constructed no steeper than two horizontal to one vertical. Fill slopes should be overfilled during construction and then cut back to expose fully compacted soil. A suitable alternative would be to compact the slopes during construction, then roll the final slopes to provide dense, erosion-resistant surfaces.

Slope Protection

Since the site soil materials are susceptible to erosion by running water, measures should be provided to prevent surface water from flowing over slope faces. Slopes at the project should be planted with a deep rooted ground cover as soon as possible after completion. The use of succulent ground covers such as iceplant or sedum is not recommended. If watering is necessary to sustain plant growth on slopes, then the watering operation should be monitored to assure proper operation of the irrigation system and to prevent over watering.

Soil Expansiveness

The upper materials encountered during this investigation were tested and found to have a very low expansion potential. Therefore, specialized foundation design and construction procedures to specifically resist expansive soil activity are not anticipated at this time.

Additional evaluation of on-site and any imported soils for their expansion potential should be conducted following completion of the grading operation.

Foundation Design

If the site is prepared as recommended, the proposed structure may be safely founded on conventional shallow foundations, either individual spread footings or continuous wall footings, bearing on a minimum of 24 inches of engineered compacted fill placed over competent older alluvial materials. Foundations should have a minimum width of 12 inches and should be established a minimum of 12 inches below lowest adjacent grade.

For the minimum width and depth, footings may be designed using a maximum soil bearing pressure of 2,000 pounds per square foot (psf) for dead plus live loads. Footings at least 15 inches wide, placed at least 18 inches below the lowest adjacent final grade, may be designed for a maximum soil bearing pressure of 2,400 psf for dead plus live loads.

The above values are net pressures; therefore, the weight of the foundations and the backfill over the foundations may be neglected when computing dead loads. The values apply to the maximum edge pressure for foundations subjected to eccentric loads or overturning. The recommended pressures apply for the total of dead plus frequently applied live loads, and incorporate a factor of safety of at least 3.0. The allowable bearing pressures may be increased by one-third for temporary wind or seismic loading. The resultant of the combined vertical and lateral seismic loads should act within the middle one-third of the footing width. The maximum calculated edge pressure under the toe of foundations subjected to eccentric loads or overturning should not exceed the increased allowable pressure. The buildings should be setback from slopes as indicted within the California Building Code (2019).

Resistance to lateral loads will be provided by passive earth pressure and base friction. For footings bearing against compacted fill, passive earth pressure may be considered to be developed at a rate of 270 pounds per square foot per foot of depth. Base friction may be computed at 0.28 times the normal load. Base friction and passive earth pressure may be combined without reduction. These values are for dead load plus live load and may be increased by one-third for wind or seismic loading.

Settlement

Total settlement of individual foundations will vary depending on the width of the foundation and the actual load supported. Maximum settlement of shallow foundations designed and constructed in accordance with the preceding recommendations are estimated to be on the order of 0.5 inch. Differential settlements between adjacent footings should be about one-half of the total settlement. Settlement of all foundations is expected to occur rapidly, primarily as a result of elastic compression of supporting soils as the loads are applied, and should be essentially completed shortly after initial application of the loads.

Building Area Slab-on-Grade

To provide adequate support, concrete floor slabs-on-grade should bear on a minimum of 24 inches of engineered fill compacted soil. The final pad surfaces should be rolled to provide smooth, dense surfaces.

Slabs to receive moisture-sensitive coverings should be provided with a moisture vapor retarder/barrier. We recommend that a vapor retarder/barrier be designed and constructed according to the American Concrete Institute 302.1R, Concrete Floor and Slab Construction, which addresses moisture vapor retarder/barrier construction. At a minimum,

the vapor retarder/barrier should comply with ASTM E1745 and have a nominal thickness of at least 10 mils. The vapor retarder/barrier should be properly sealed, per the manufacturer's recommendations, and protected from punctures and other damage. Per the Portland Cement Association, for slabs with vapor-sensitive coverings, a layer of dry, granular material (sand) should be placed under the vapor retarder/barrier.

For slabs in humidity-controlled areas, a layer of dry, granular material (sand) should be placed above the vapor retarder/barrier.

The slabs should be protected from rapid and excessive moisture loss which could result in slab curling. Careful attention should be given to slab curing procedures, as the site area is subject to large temperature extremes, humidity, and strong winds.

Exterior Flatwork

To provide adequate support, exterior flatwork improvements should rest on a minimum of 12 inches of soil compacted to at least 90 percent (ASTM D 1557).

Flatwork surface should be sloped a minimum of 1 percent away from buildings and slopes, to approved drainage structures.

Wall Pressures

The design of footings for retaining walls should be performed in accordance with the recommendations described earlier under Preparation of Foundation Areas and Foundation Design. For design of retaining wall footings, the resultant of the applied loads should act in the middle one-third of the footing, and the maximum edge pressure should not exceed the basic allowable value without increase.

For design of retaining walls unrestrained against movement at the top, we recommend an active pressure of 46 pounds per square foot (psf) per foot of depth be used.

This assumes level backfill consisting of compacted, non-expansive, soils placed against the structures and within the back cut slope extending upward from the base of the stem at 35 degrees from the vertical or flatter. Non-expansive import soils may be required. Retaining structures subject to uniform surcharge loads within a horizontal distance behind the structures equal to the structural height should be designed to resist additional lateral loads equal to 0.45 times the surcharge load. Any isolated or line loads from adjacent

foundations or vehicular loading will impose additional wall loads and should be considered individually.

To avoid over stressing or excessive tilting during placement of backfill behind walls, heavy compaction equipment should not be allowed within the zone delineated by a 45 degree line extending from the base of the wall to the fill surface. The backfill directly behind the walls should be compacted using light equipment such as hand operated vibrating plates and rollers. No material larger than three inches in diameter should be placed in direct contact with the wall.

Wall pressures should be verified prior to construction, when the actual backfill materials and conditions have been determined. Recommended pressures are applicable only to level, non-expansive, properly drained backfill with no additional surcharge loadings. If inclined backfills are proposed, this firm should be contacted to develop appropriate active earth pressure parameters.

Preliminary Pavement Design

Testing and design for preliminary onsite pavement was conducted in accordance with the California Highway Design Manual. Based upon our preliminary sampling and testing, and upon an assumed Traffic Index generally used for similar projects, it appears that the structural sections tabulated below should provide satisfactory pavements for the subject on-site pavement improvements:

AREA	T.I.	DESIGN R-VALUE	PRELIMINARY SECTION
On site vehicular parking with occasional truck traffic (ADTT=10)	6.0	25	0.25’ AC / 0.80' AB or 5" JPCP / 4" AB
Light to moderate truck traffic (ADTT=25)	7.0	25	0.30'AC / 0.95'AB or 6" JPCP / 4" AB
AC - Asphalt Concrete AB - Class 2 Aggregate Base JPCP - Jointed Plain Concrete Pavement with MR ≥ 550 psi			

The above structural sections are predicated upon 90 percent relative compaction (ASTM D 1557) of all utility trench backfills and 95 percent relative compaction (ASTM D 1557) of the upper 12 inches of pavement subgrade soils and of any aggregate base utilized. In addition, the aggregate base should meet Caltrans specifications for Class 2 Aggregate Base.

In areas of the pavement which will receive high abrasion loads due to start-ups and stops, or where trucks will move on a tight turning radius, consideration should be given to installing concrete pads. Such pads should be a minimum of 5 inch thick concrete, with a 4 inch thick aggregate base. Concrete pads are also recommended in areas adjacent to trash storage areas where heavier loads will occur due to operation of trucks lifting trash dumpsters.

The recommended concrete pavement sections should have a minimum modulus of rupture (MR) of 500 pounds per square inch (psi). Transverse joints should be sawcut in the pavement at approximately 12 to 15-foot intervals within 4 to 6 hours of concrete placement, or preferably sooner. Sawcut depth should be equal to approximately one quarter of slab thickness. Construction joints should be constructed such that adjacent sections butt directly against each other and are keyed into each other. Parallel pavement sections should also be keyed into each other.

It should be noted that all of the above pavement design was based upon the results of preliminary sampling and testing, and should be verified by additional sampling and testing during construction when the actual subgrade soils are exposed.

Infiltration

The results of our field investigation and percolation test data indicates the site earth materials at the depths and locations tested are not conducive to acceptable infiltration. Therefore, water quality storm water systems should not incorporate on-site infiltration when determining storm water treatment capacity.

Construction Monitoring

Post investigative services are an important and necessary continuation of this investigation. Project plans and specifications should be reviewed by the project geotechnical consultant prior to construction to confirm that the intent of the recommendations presented in this report have been incorporated into the design.

Additional R-value, expansion, and soluble sulfate content testing may be needed after/during site rough grading.

During construction, sufficient and timely geotechnical observation and testing should be provided to correlate the findings of this investigation with the actual subsurface conditions exposed during construction. Items requiring observation and testing include, but are not necessarily limited to, the following:

1. Site preparation-stripping and removals.

2. Excavations, including approval of the bottom of excavations prior to the processing and preparation of the bottom areas for fill placement.

3. Scarifying and recompacting prior to fill placement.

4. Placement of engineered compacted fill and backfill, including approval of fill materials and the performance of sufficient density tests to evaluate the degree of compaction being achieved

5. Foundation excavations.

6. Subgrade preparation for pavements and slabs-on-grade. This includes pre-saturation testing of slab-on-grade and flatwork areas to verify moisture content.

LIMITATIONS

This report contains geotechnical conclusions and recommendations developed solely for use by Compass Danbe Real Estate Partners II, LLC and their design consultants for the purposes described earlier. It may not contain sufficient information for other uses or the purposes of other parties. The contents should not be extrapolated to other areas or used for other facilities without consulting LOR Geotechnical Group, Inc.

The recommendations are based on interpretations of the subsurface conditions concluded from information gained from subsurface explorations and a surficial site reconnaissance. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. If conditions are encountered during the construction of the project, which differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided. Due to possible subsurface variations, all aspects of field construction addressed in this report should be observed and tested by the project geotechnical consultant.

If parties other than LOR Geotechnical Group, Inc., provide construction monitoring services, they must be notified that they will be required to assume responsibility for the geotechnical phase of the project being completed by concurring with the recommendations provided in this report or by providing alternative recommendations.

The report was prepared using generally accepted geotechnical engineering practices under the direction of a state licensed geotechnical engineer. No warranty, expressed or implied, is made as to conclusions and professional advice included in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations as deemed necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Governmental Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a significant amount of time without a review by LOR Geotechnical Group, Inc., verifying the suitability of the conclusions and recommendations.

CLOSURE

It has been a pleasure to assist you with this project. We look forward to being of further assistance to you as construction begins. Should conditions be encountered during construction that appear to be different than indicated by this report, please contact this office immediately in order that we might evaluate their effect.

Should you have any questions regarding this report, please do not hesitate to contact our office at your convenience.

Respectfully submitted,
LOR Geotechnical Group, Inc.

Andrew A. Tardie
Staff Geologist

Robert M. Markoff, CEG
Engineering Geologist

John P. Leuer, GE 2030
President

AAT:RMM:JPL:ss





Distribution: Addressee (2) and PDF via email mbachli@danbe.com
cc: Vicky Valenzuela via email vicky@cdrepartners.com

REFERENCES

American Society of Civil Engineers, 2016, Minimum Design Load for Buildings and Other Structures, ASCE 7-16.

California Building Standards Commission and International Conference of Building Officials, 2019, California Building Code, 2019 Edition.

California Department of Water Resources, 2022, Online Water Data Library (WDL), https://wdl.water.ca.gov/waterdatalibrary/Map.aspx, accessed May 2022.

County of Riverside, Flood Control and Water Conservation District (CRFCWCD), 2011, Design Handbook for Low Impact Development Best Management Practices, dated September 2011.

County of Riverside, Transportation and Land Management Agency (CRTLMA), 2022, Geographic Information System, http://www3.tlma.co.riverside.ca.us, accessed April 2022.

Google Earth, 2022, Imagery from various years, www.google.com/earth.

Hart, E.W. and W.A. Bryant, 2010, Fault-Rupture Hazard Zones in California, California Dept. of Conservation Division of Mines and Geology Special Publication 42.

Historic Aerials (Nationwide Environmental Title Research, LLC), 2022, Imagery from Various Years, https://www.historicaerials.com/, accessed May 2022.

Larson, R., and Slosson, J., 1992, The Role of Seismic Hazard Evaluation in Engineering Reports, in Engineering Geology Practice in Southern California, AEG Special Publication Number 4, pp 191-194.

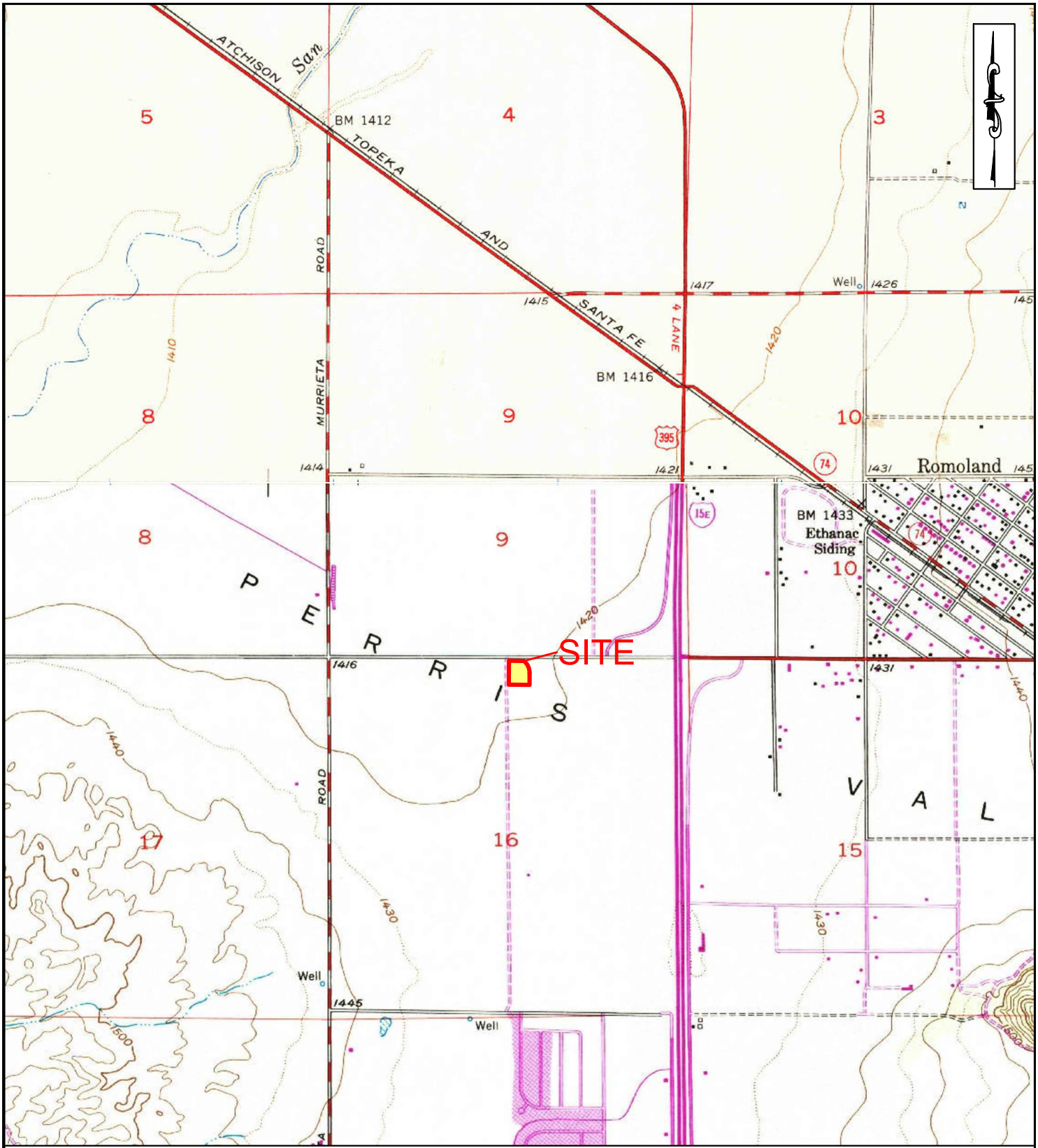
Morton, D.M., 2003, Preliminary Geologic Map of the Romoland 7.5' Quadrangle, Riverside County, California, U.S.G.S. Open File Report 03-102.

USGS, 2021, https://earthquake.usgs.gov/earthquakes/map/, accessed February 2022.

Watermaster Support Services, Western Municipal Water District, and San Bernardino Valley Water Conservation District, 2021, Cooperative Well Measuring Program, Spring 2021, Covering the Upper Santa Ana River Watershed, San Jacinto Watershed, and Santa Margarita Watershed, July 1, 2021.

APPENDIX A

Index Map, Alta Survey, Site Plan, Regional Geologic Map and Historical Seismicity Maps

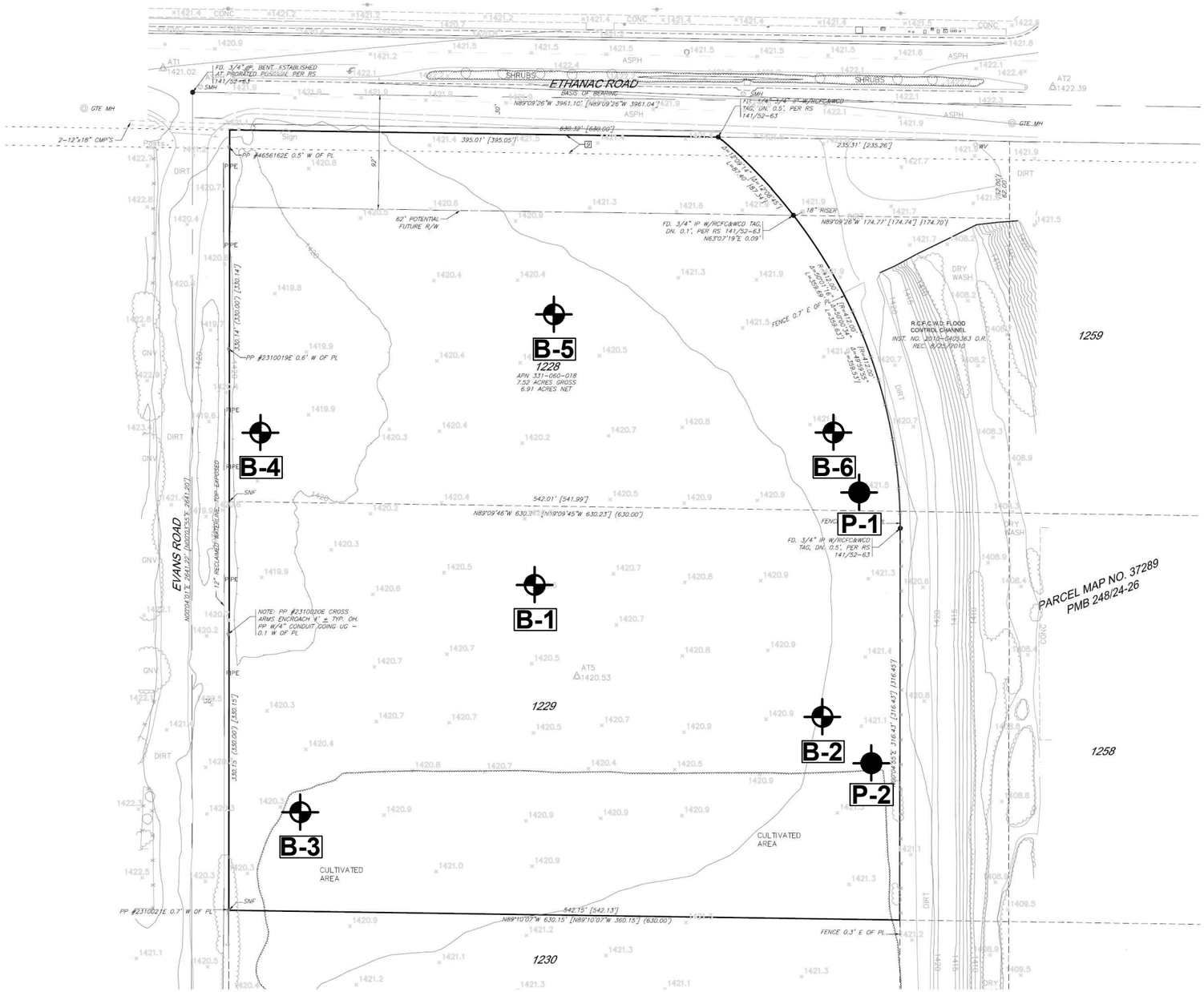


INDEX MAP

PROJECT:	APN 331-060-018, Menifee, California	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-1
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	May 2022
		SCALE:	1" ≈ 2,000'

ALTA SURVEY

IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA



Legend

(Locations Approximate)

Map Symbols

- **B-6** - Exploratory Boring
- **P-2** - Percolation Test

MONUMENT NOTES:

- ● INDICATES FOUND MONUMENT AS NOTED
- ( ) – INDICATES RECORD DATA PER MB 15/77–78
- [ ] – INDICATED RECORD DATA PER RS 141/52–63 AND DISTANCES SHOWN ARE CONVERTED TO GROUND DISTANCES
- | | – INDICATES RECORD DATA PER INST. #2010–0405363, O.R.
- SNF – SEARCHED, NOT FOUND

SURVEYOR'S NOTE:

BASIS OF BEARINGS:

THE BASIS OF BEARINGS FOR THE SURVEY IS THE CENTERLINE OF ETHANAC ROAD BEING NORTH 89°09'26" WEST PER RS 141/52–63.

BENCHMARK: 600–31

SURVEY DISK SET IN TOP OF CONCRETE MONUMENT STAMPED 600–31–68 LOCATED 700' NORTH OF INTERSECTION OF MURRIETA ROAD AND ETHANAC ROAD, 40' WEST OF MURRIETA ROAD AND LEVEL WITH THE ROAD, 3' NORTHEAST OF THE SOUTH EAST CORNER OF AN 8' CHAIN LINK FENCE OF E.M.W.D. MURRIETA PUMPING STATION, 2' NORTH OF A MARKER POST.
ELEVATION: 1416.90' NAVD88 (US SURVEY FEET)

OFFSET DISTANCES:

DISTANCES TO OBJECTS FROM THE PROPERTY LINE ARE SHOWN FROM THE CENTER OF OBJECT WHEN OBJECT IS CIRCULAR IN SHAPE.

SURVEYOR/MAP PREPARER:

J.D. COLE & ASSOCIATES, INC.
11056 RAMONA STREET
YUCAIPA, CA 92399
(909) 797–2074

ALTA SURVEY

PROJECT NO.:	23798.1
ENCLOSURE:	A-2a
DATE:	May 2022
SCALE:	1" ≈ 100'

APN 331-060-018, Menifee, California

PROJECT:

Compass Danbe Real Estate Partners II, LLC

CLIENT:

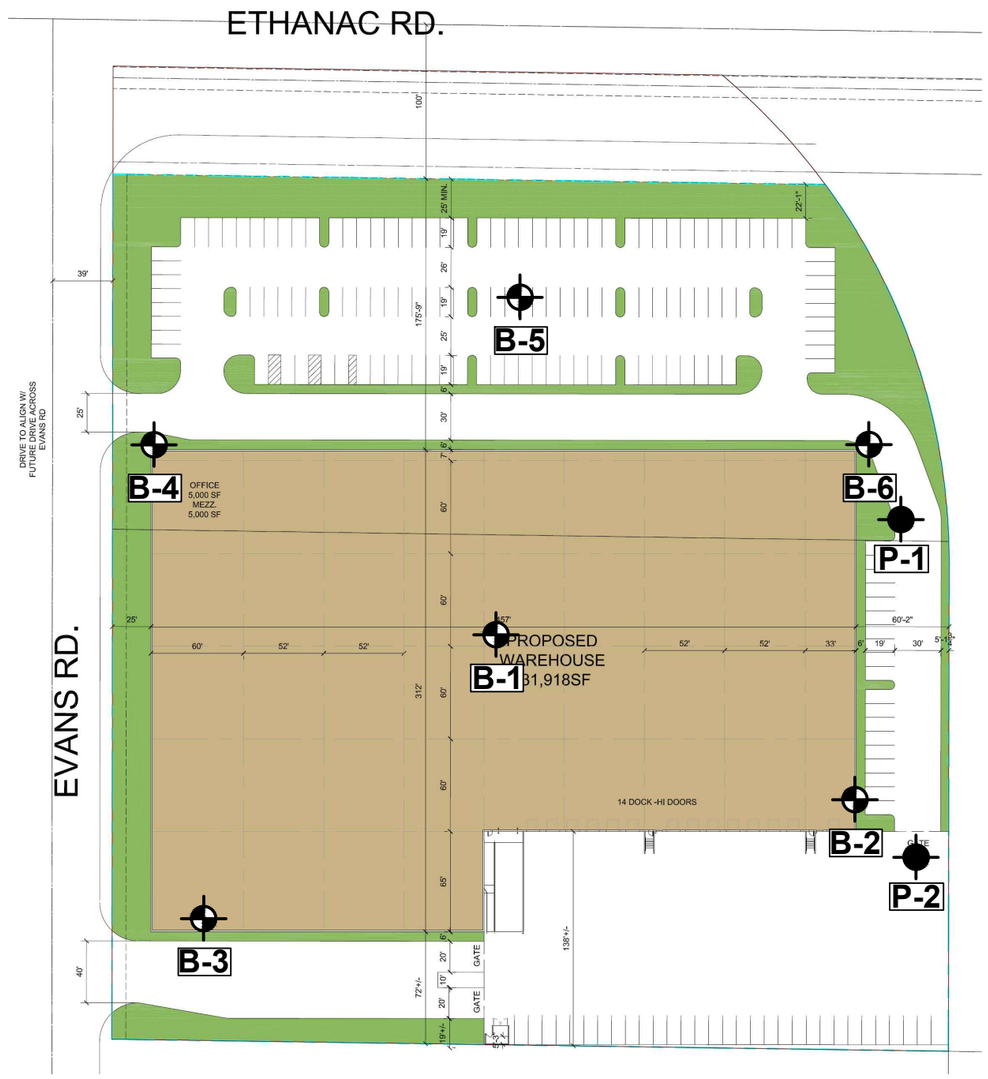
LOR GEOTECHNICAL GROUP, INC.

Legend

(Locations Approximate)

Map Symbols

- **B-6** - Exploratory Boring
- **P-2** - Percolation Test



A CONCEPTUAL SITE PLAN
SCALE: 1" = 30'

CDRE- EVAN RD.
MENIFEE, CA

PROJECT
SCHEME 8
SITE PLAN

APN - 331-060-018

PROJECT INFORMATION - SCHEME 8			04.19.2022
GROSS SITE AREA	297,289 SF	6.82 AC	
TOTAL BUILDING AREA		131,918 SF	
NET FAR		44.4%	
MAX FAR		100%	
ZONING		EDC-NG	
STREET SETBACK		25'	
INTERIOR SIDE/REAR		0'	
MAX BUILDING HEIGHT		70'	
CONSTRUCTION TYPE		III-B	
LANDSCAPE REQUIRED	10%	29,729 SF	
LANDSCAPE PROVIDED	15.2%	45,248 SF	
BUILDING AREA		**131,918 SF**	
FOOTPRINT		126,918 SF	
WAREHOUSE		121,918 SF	
OFFICE		5,000 SF	
MEZZANINE		5,000 SF	
OFFICE		5,000 SF	
PARKING REQUIRED		162	
WAREHOUSE @ 1/1,000		122	
OFFICE @ 1/250		40	
PARKING PROVIDED		177	
STANDARD		156	
VAN ADA		1	
STND ADA		3	
EV VAN ADA		1	
EV STND ADA		1	
EVC		9	
CLEAN AIR		6	
TRAILER			

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714.389.2800
info@Herdman-ad.com

A21-2396
04.19.2022

NORTH

CONCEPTUAL
SITE PLAN

SITE PLAN

APN 331-060-018, Menifee, California

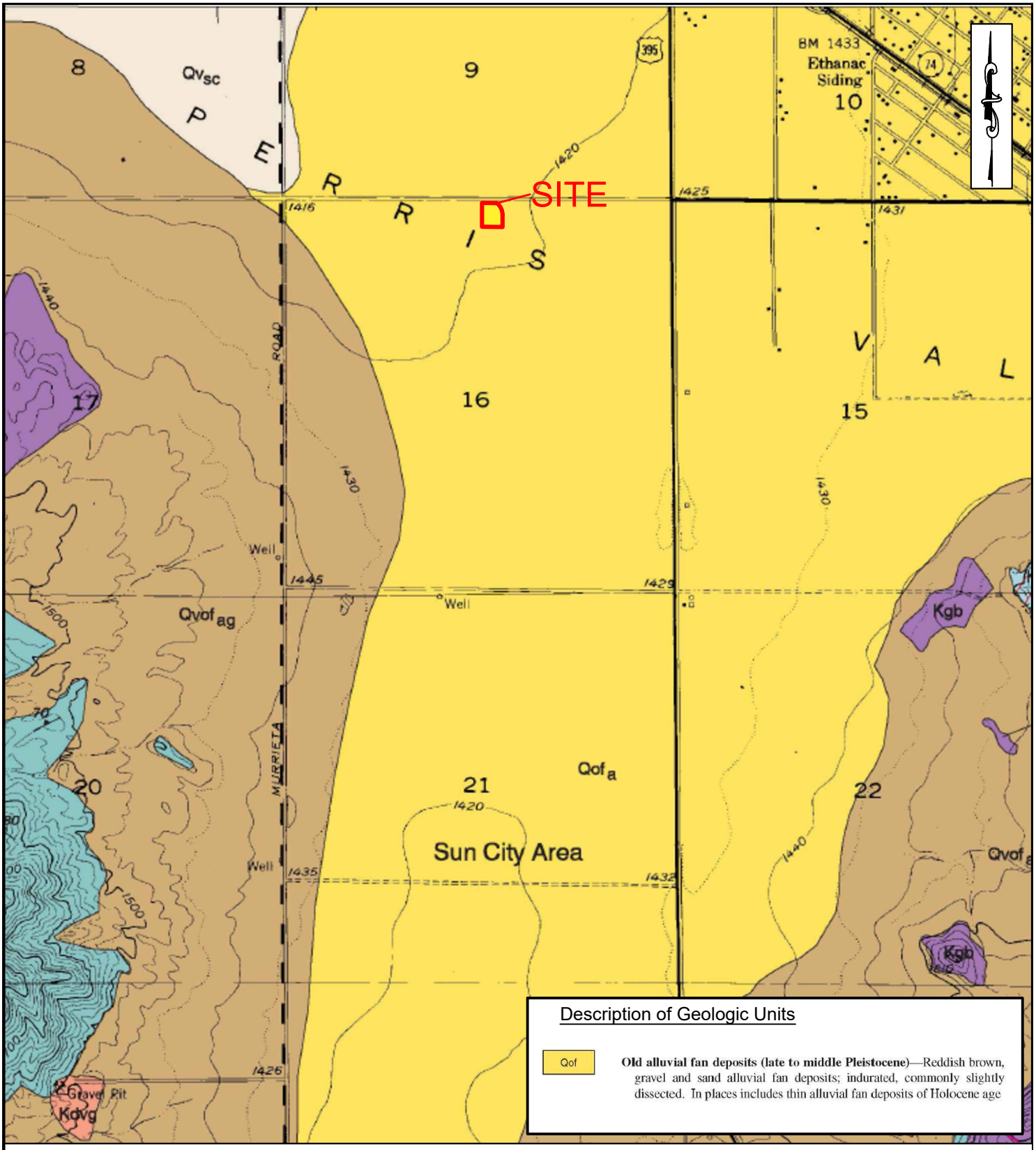
Compass Danbe Real Estate Partners II, LLC

LOR GEOTECHNICAL GROUP, INC.

PROJECT NO.:	23798.1
ENCLOSURE:	A-2b
DATE:	May 2022
SCALE:	1" ≈ 100'

PROJECT:

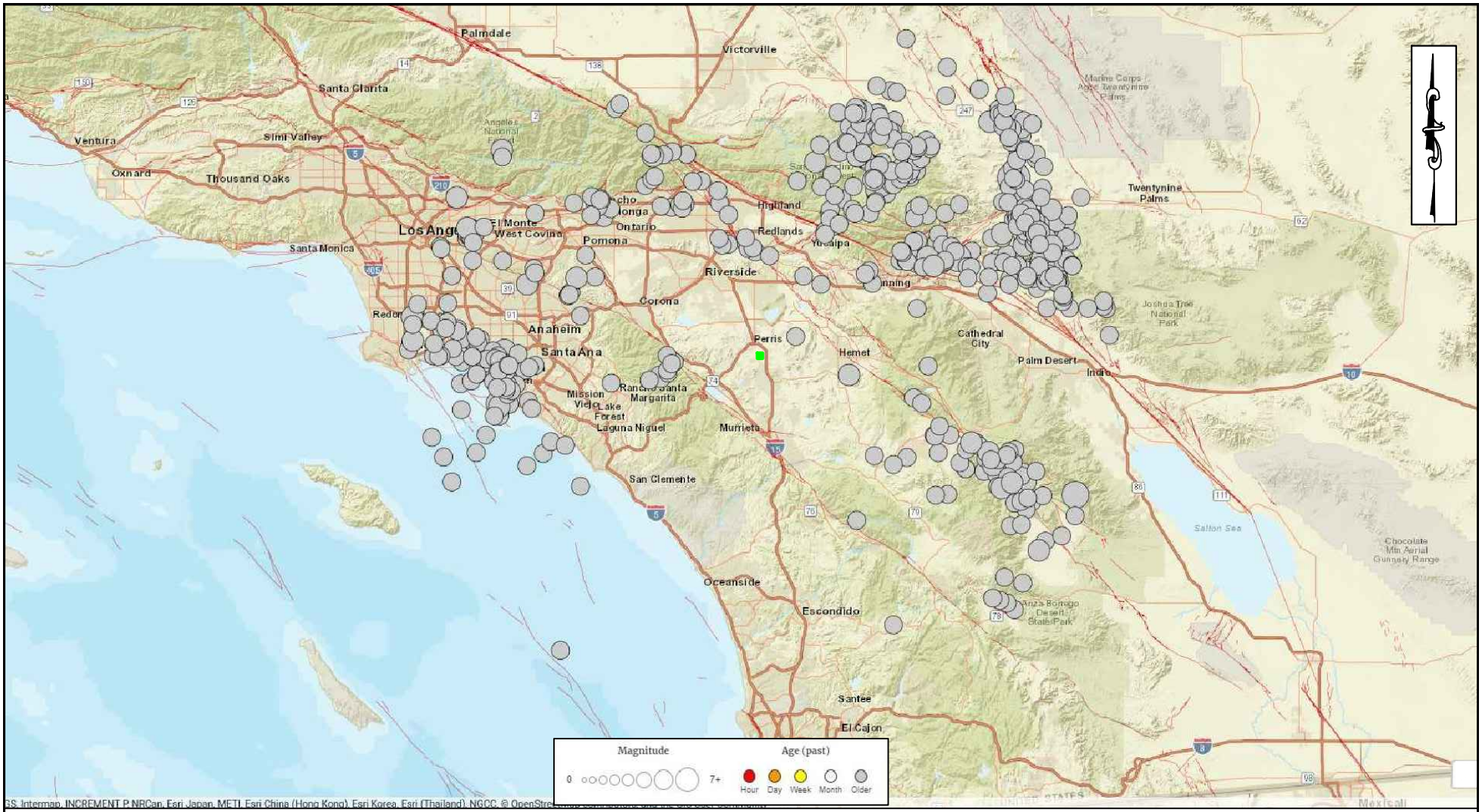
CLIENT:



REGIONAL GEOLOGIC MAP

(Morton, 2003)

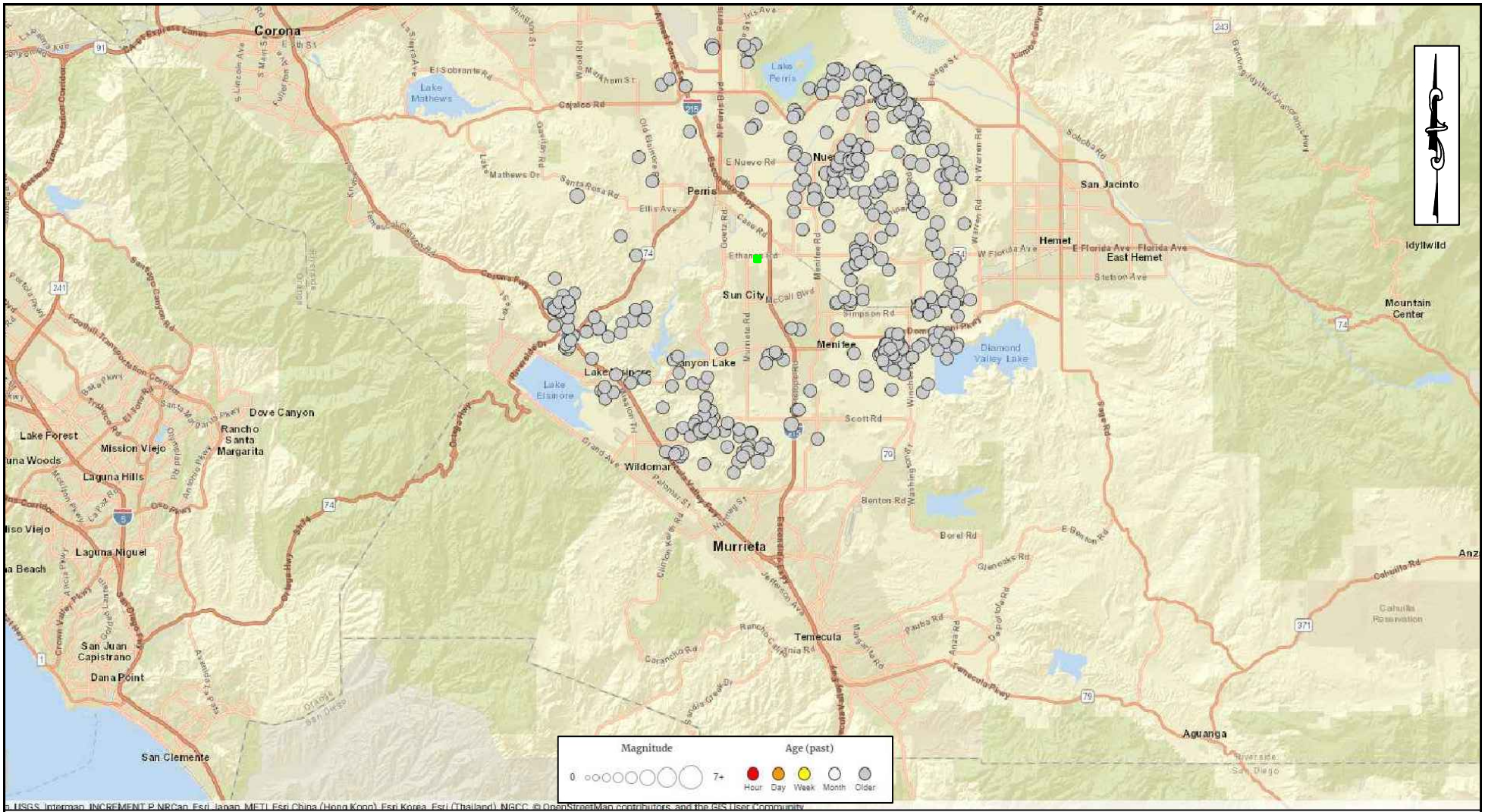
PROJECT:	APN 331-060-018, Menifee, California	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-3
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	April 2022
		SCALE:	1" ≈ 2,000'



U.S. Geologic Survey (2022) real-time earthquake epicenter map. Plotted are 530 epicenters of instrument-recorded events from 01/01/32 to present (05/09/22) of local magnitude 4+ within a radius of ~62 miles (100 kilometers) of the site. Location accuracy varies. The site is indicated by the green square. The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 100km Radius

PROJECT:	APN 331-060-018, Menifee, California	**PROJECT NO.:**	23789.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-4
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	May 2022
		SCALE:	1" ≈ 40km



U.S. Geologic Survey (2022) real-time earthquake epicenter map. Plotted are 427 epicenters of instrument-recorded events from 01/01/78 to present (05/09/22) of local magnitude 1+ within a radius of ~9.2 miles (15 kilometers) of the site. Location accuracy varies. The site is indicated by the green square. The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 15km Radius

PROJECT:	APN 331-060-018, Menifee, California	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-5
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	May 2022
		SCALE:	1" ≈ 10km

APPENDIX B

Field Investigation Program and Boring Logs

APPENDIX B
FIELD INVESTIGATION

Subsurface Exploration

Our subsurface exploration of the site consisted of drilling 6 exploratory borings to depths between approximately 11.5 to 51.5 feet below the existing ground surface using a Mobile B-61 drill rig on April 21, 2022. The approximate locations of the borings are shown on Enclosure A-2 within Appendix A.

The drilling exploration was conducted using a Mobile B-61 drill rig equipped with 8-inch diameter hollow stem augers. The soils were continuously logged by a geologist from this firm who inspected the site, created detailed logs of the borings, obtained undisturbed, as well as disturbed, soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Relatively undisturbed samples of the subsoils were obtained at a maximum interval of 5 feet. The samples were recovered by using a California split barrel sampler of 2.50 inch inside diameter and 3.25 inch outside diameter or a Standard Penetration Sampler (SPT) from the ground surface to the total depth explored. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for field procedures (N60) which are included in the boring logs, Enclosures B-1 through B-6.

The undisturbed soil samples were retained in brass sample rings of 2.42 inches in diameter and 1.00 inch in height, and placed in sealed plastic containers. Disturbed soil samples were obtained at selected levels within the borings and placed in sealed containers for transport to our geotechnical laboratory.

All samples obtained were taken to our geotechnical laboratory for storage and testing. Detailed logs of the borings are presented on the enclosed Boring Logs, Enclosures B-1 through B-6. A Boring Log Legend is presented on Enclosure B-i. A Soil Classification Chart is presented as Enclosure B-ii.

CONSISTENCY OF SOIL

SANDS

SPT BLOWS	CONSISTENCY
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Over 50	Very Dense

COHESIVE SOILS

SPT BLOWS	CONSISTENCY
0-2	Very Soft
2-4	Soft
4-8	Medium
8-15	Stiff
15-30	Very Stiff
30-60	Hard
Over 60	Very Hard

SAMPLE KEY

Symbol	Description
	INDICATES CALIFORNIA SPLIT SPOON SOIL SAMPLE INDICATES BULK SAMPLE INDICATES SAND CONE OR NUCLEAR DENSITY TEST INDICATES STANDARD PENETRATION TEST (SPT) SOIL SAMPLE

TYPES OF LABORATORY TESTS

1	Atterberg Limits
2	Consolidation
3	Direct Shear (undisturbed or remolded)
4	Expansion Index
5	Hydrometer
6	Organic Content
7	Proctor (4", 6", or Cal216)
8	R-value
9	Sand Equivalent
10	Sieve Analysis
11	Soluble Sulfate Content
12	Swell
13	Wash 200 Sieve

BORING LOG LEGEND

PROJECT:	Proposed Industrial Developement	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	B-i
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	May 2022

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	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
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	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
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	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
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	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

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	
12"	3"	3/4"	No . 4	No. 10	No. 40	200	

(U.S. STANDARD SIEVE SIZE)

SOIL CLASSIFICATION CHART

PROJECT:	Proposed Industrial Developement	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	B-ii
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	May 2022

LOG OF BORING B-1

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
									TEST DATA
0								SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 5% coarse grained sand, 20% medium grained sand, 40% fine grained sand, 35% silty fines, brown, dry, loose, some manure on surface.
	64 for 11"	3, 4, 7, 9, 10, 11	7.9		128.4	■		SC	
5	41		18.3		108.2	■			@ 2 feet, OLDER ALLUVIUM: CLAYEY SAND, approximately 10% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 40% clayey fines of low plasticity, red brown, damp, some secondary calcite.
10	61		17.9		110.1	■		SM	@ 10 feet, SILTY SAND, approximately 5% medium grained sand, 75% fine grained sand, 20% silty fines, yellow brown, moist, micaceous.
15	47		20.3		93.0	■		ML	@ 15 feet, SANDY SILT, approximately 30% fine grained sand, 70% silty fines, brown, damp.
20	68 for 11"		13.8		118.6	■		CL	@ 20 feet, LEAN CLAY with SAND, approximately 20% fine grained sand, 80% clayey fines of low plasticity, red brown, damp.
25	76		22.9		103.1	■		ML	@ 25 feet, SANDY SILT, approximately 20% fine grained sand, 80% silty fines with trace clay, yellow brown, moist.
30	67		4.5			▒		SP	@ 30 feet, POORLY GRADED SAND, approximately 5% coarse grained sand, 35% medium grained sand, 55% fine grained sand, 5% silty fines, tan, dry.
35	118		3.7			▒			
40	77		3.5			▒			
45	81		4.6			▒		SW	@ 45 feet, WELL GRADED SAND, approximately 30% coarse grained sand, 30% medium grained sand, 35% fine grained sand, 5% silty fines, white, dry.
50	36		16.5			▒		SM CL	@ 50 feet, SILTY SAND, approximately 10% coarse grained sand, 35% medium grained sand, 35% fine grained sand, 20% silty fines, red brown, moist.
55									@ 51 feet, LEAN CLAY with SAND, approximately 20% fine grained sand, 80% clayey fines of low plasticity, red brown, moist.
60									END OF BORING @ 51.5'

Fill to 2'
No groundwater
No bedrock

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1,421
		DATE DRILLED:	April 21, 2022
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-1

LOG OF BORING B-2

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 5% coarse grained sand, 15% medium grained sand, 45% fine grained sand, 35% silty fines, dry, loose, manure on surface.
	27		10.4		121.1			SC	@ 2 feet, OLDER ALLUVIUM: CLAYEY SAND, approximately 10% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 35% clayey fines of low plasticity, red brown, damp.
5	64		11.5		118.4				
10	33		28.2		93.2				@ 10 feet, becomes slightly coarser grained, moist.
15	61		20.6		103.8			ML	@ 15 feet, SANDY SILT, approximately 40% fine grained sand, 60% silty fines, red brown, damp.
20	43		32.2		87.9			CL	@ 20 feet, LEAN CLAY with SAND, approximately 20% fine grained sand, 80% clayey fines of low plasticity, red brown, moist.
									END OF BORING @ 21.5'
25									Fill to 2' No groundwater No bedrock

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1,421
LOR GEOTECHNICAL GROUP, INC.		**DATE DRILLED:**	April 21, 2022
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-2

LOG OF BORING B-3

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10, 11						SM	@ 0 feet, FILL/TOPSOIL: **SILTY SAND, approximately 15% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 35% silty fines, brown, dry, loose.**
	41		5.7		121.6				@ 2 feet, OLDER ALLUVIUM: **SILTY SAND, approximately 10% coarse grained sand, 30% medium grained sand, 30% silty fines, red brown, damp.**
5	29		8.3		120.2				@ 5 feet, becomes slightly coarser grained.
10	62		10.9		126.5			CL	@ 10 feet, LEAN CLAY with SAND, approximately 5% medium grained sand, 20% fine grained sand, 75% clayey fines of low plasticity, red brown, damp.
15	47		28.7		92.8				@ 15 feet, becomes moist.
20	33		34.3		84.8				@ 20 feet, LEAN CLAY with SAND, approximately 15% fine grained sand, 85% clayey fines of low plasticity, gray, moist.
25	82 for 11"		15.7		114.6			SC	@ 25 feet, CLAYEY SAND, approximately 15% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 35% clayey fines of low plasticity, red brown, damp.
									END OF BORING @ 26.42'
									Fill to 2' **No groundwater** **No bedrock**
30									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1,420
		DATE DRILLED:	April 21, 2022
LOR	GEOTECHNICAL GROUP, INC.	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-3

LOG OF BORING B-4

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0								SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 5% coarse grained sand, 20% medium grained sand, 45% fine grained sand, 30% silty fines, brown, dry, loose, some manure on surface.
	76 for 11"		7.8		116.1			SC	@ 2 feet, OLDER ALLUVIUM: CLAYEY SAND, approximately 10% coarse grained sand, 25% medium grained sand, 35% fine grained sand, 30% clayey fines of low plasticity, red brown, damp.
5	71		10.4		118.6			CL	@ 5 feet, LEAN CLAY with SAND, approximately 15% fine grained sand, 85% clayey fines of low plasticity, red brown, damp.
10	54		13.9		120.6				
15	63		8.0		120.0			SC	@ 15 feet, CLAYEY SAND, approximately 20% coarse grained sand, 20% medium grained sand, 20% fine grained sand, 40% clayey fines of low plasticity, red brown, damp.
20	50		20.1		109.1			ML	@ 20 feet, SANDY SILT, approximately 5% medium grained sand, 30% fine grained sand, 65% silty fines with trace clay, red brown, moist.
									END OF BORING @ 21.5'
25									Fill to 2' No groundwater No bedrock

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1,420
		DATE DRILLED:	April 21, 2022
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-4

LOG OF BORING B-5

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		8, 9, 10, 11						SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 10% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 35% silty fines, brown, dry, loose, some manure on surface.
	35		5.9		124.8			SC	@ 2 feet, OLDER ALLUVIUM: CLAYEY SAND, approximately 5% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 45% clayey fines of low plasticity, red brown, damp, some thin calcite stringers.
5	52		12.2		120.9			ML	@ 5 feet, SANDY SILT, approximately 20% medium grained sand, 25% fine grained sand, 55% silty fines with trace clay, red brown, damp.
10	36		12.6		122.7				END OF BORING @ 11.5' Fill to 2' No groundwater No bedrock
15									

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1,420
LOR	GEOTECHNICAL GROUP, INC.	**DATE DRILLED:**	April 21, 2022
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-5

LOG OF BORING B-6

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0	43		6.6		127.5			SM	**@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 5% coarse grained sand, 20% medium grained sand, 35% fine grained sand, 35% silty fines, brown, dry, loose, some manure on surface.** **@ 2 feet, OLDER ALLUVIUM: CLAYEY SAND, approximately 10% coarse grained sand, 25% medium grained sand, 30% fine grained sand, 35% clayey fines of low plasticity, red brown, dry.**
5	60		12.3		113.2				**@ 5 feet, becomes slightly coarser grained, moist.**
10	65		7.2		122.3			ML SM	**@ 10 feet, SANDY SILT/SILTY SAND, approximately 20% medium grained sand, 30% fine grained sand, 50% silty fines, yellow brown, damp.**
15	68		16.7		109.8			SM	**@ 15 feet, SILTY SAND, approximately 80% fine grained sand, 20% silty fines, yellow brown, moist, some secondary calcite.**
20	38		31.4		91.7			CL	**@ 20 feet, LEAN CLAY with SAND, approximately 20% fine grained sand, 80% clayey fines of low plasticity, red brown, moist, some secondary calcite.**
25									**END OF BORING @ 21.5'** **Fill to 2'** **No groundwater** **No bedrock**

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1,421
		DATE DRILLED:	April 21, 2022
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-6

APPENDIX C

Laboratory Testing Program and Test Results

APPENDIX C
LABORATORY TESTING

General

Selected soil samples obtained from the borings were tested in our geotechnical laboratory to evaluate the physical properties of the soils affecting foundation design and construction procedures. The laboratory testing program performed in conjunction with our investigation included moisture content, dry density, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, expansion index, swell, and soluble sulfate content. Descriptions of the laboratory tests are presented in the following paragraphs:

Moisture Density Tests

The moisture content and dry density information provides an indirect measure of soil consistency for each stratum, and can also provide a correlation between soils on this site. The dry unit weight and field moisture content were determined for selected undisturbed samples, in accordance with ASTM D 2921 and ASTM D 2216, respectively, and the results are shown on the boring logs, Enclosures B-1 through B-6 for convenient correlation with the soil profile.

Laboratory Compaction

A selected soil sample was tested in the laboratory to determine compaction characteristics using the ASTM D 1557 compaction test method. The results are presented in the following table:

LABORATORY COMPACTION				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Maximum Dry Density (pcf)**	**Optimum Moisture Content (percent)**
B-1	0-3	(SC) Clayey Sand	127.0	10.0

Direct Shear Test

Shear tests are performed in general accordance with ASTM D 3080 with a direct shear machine at a constant rate-of-strain (0.04 inches/minute). The machine is designed to test a sample partially extruded from a sample ring in single shear. Samples are tested at varying normal loads in order to evaluate the shear strength parameters, angle of internal friction and cohesion. Samples are tested in remolded condition (90 percent relative compaction per ASTM D 1557) and soaked, to represent the worse case conditions expected in the field.

The results of the shear test on a selected soil sample is presented in the following table:

DIRECT SHEAR TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Apparent Cohesion (psf)**	**Angle of Internal Friction (degrees)**
B-1	0-3	(SC) Clayey Sand	250	28

Sieve Analysis

A quantitative determination of the grain size distribution was performed for selected samples in accordance with the ASTM D 422 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen. The results of the grain size distribution analyses are presented graphically on Enclosure C-1.

Sand Equivalent

The sand equivalent of selected soils were evaluated using the California Sand Equivalent Test Method, Caltrans Number 217. The results of the sand equivalent tests are presented with the grain size distribution analyses on Enclosure C-1.

R-Value Test

A soil sample was obtained at probable pavement subgrade level, and was tested to determine its R-value using the California R-Value Test Method, Caltrans Number 301. The results of the R-value test is presented on Enclosure C-1.

Expansion Index Test

Remolded samples are tested to determine their expansion potential in accordance with the Expansion Index (EI) test. The test is performed in accordance with the Uniform Building Code Standard 18-2. The test result for a select soil sample is presented in the following table:

EXPANSION INDEX TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Expansion Index (EI)**	**Expansion Potential**
B-1	0-3	(SC) Clayey Sand	15	Very Low
Expansion Index:	0-20 Very low	21-50 Low	51-90 Medium	91-130 High

One-Dimensional Swell Test

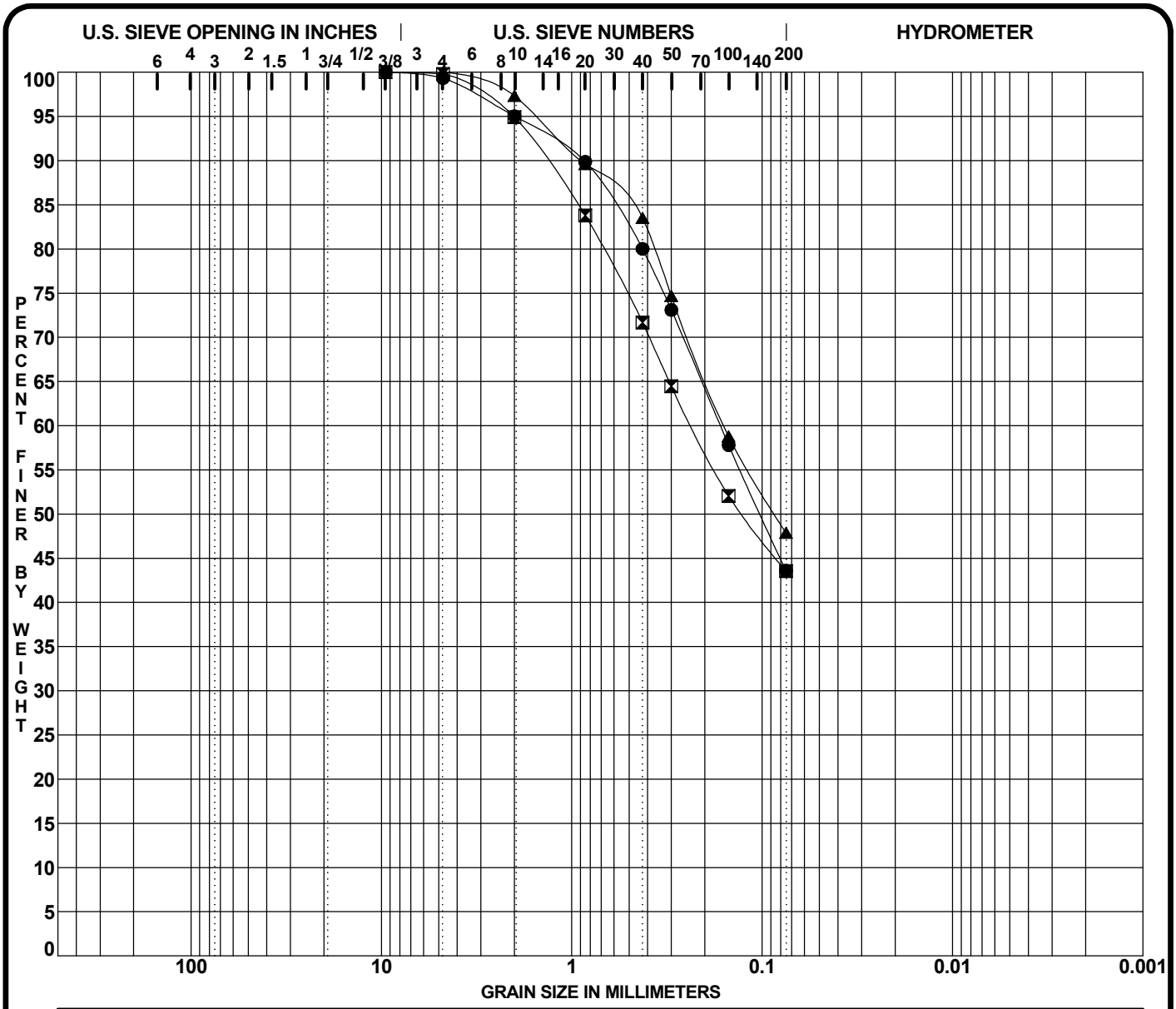
The apparatus used for the one-dimensional swell or settlement potential (odometer) is designed to test a one-inch high portion of the undisturbed soil sample as contained in a sample ring. Porous stones and filler paper are placed in contact with the top and bottom of the specimen to permit the addition or release of water. A load of 500 psf was applied to the test specimen to initiate its insitu condition, and the resulting axial deformations are recorded. The results of the one-dimensional swell or settlement potential is presented in the following table:

ONE-DIMENSIONAL SWELL TEST			
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**% Swell**
B-4	5-6	(CL) Lean Clay with Sand	1.6

Soluble Sulfate Content Test

The soluble sulfate content of a selected subgrade soil was evaluated. The concentration of soluble sulfates in the soil was determined by measuring the optical density of a barium sulfate precipitate. The precipitate results from a reaction of barium chloride with water extractions from the soil sample. The measured optical density is correlated with readings on precipitates of known sulfate concentrations. The test result is presented in the following table:

SOLUBLE SULFATE CONTENT TEST			
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Sulfate Content (% by weight)**
B-1	0-3	(SC) Clayey Sand	< 0.005
B-3	0-3	(SM) Silty Sand	0.008
B-5	0-3	(SC) Clayey Sand	0.015



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
●	B-1	@ 0-3'	(SC) Clayey Sand	15	--				
⊠	B-3	@ 0-3'	(SM) Silty Sand	15	--				
▲	B-5	@ 0-3'	(SC) Clayey Sand	13	26				

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	@ 0-3'	9.50	0.17			0.7	55.7	43.6	
⊠	B-3	@ 0-3'	9.50	0.23			0.2	56.3	43.5	
▲	B-5	@ 0-3'	4.75	0.16			0.0	52.1	47.9	

PROJECT:	Proposed Industrial Development	**PROJECT NO.:**	23798.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**DATE:**	May 2022

GRADATION CURVES

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: C-1

APPENDIX D

Seismic Design Spectra

Project: APN 331-060-018
Project Number: 23798.1
Client: Compass Danbe Real Estate Partners II, LLC
Site Lat/Long: 33.74198 / -117.19665
Controlling Seismic Source: Elsinore / San Jacinto

REFERENCE	NOTATION	VALUE
Site Class	C, D, D default, or E	D measured
Site Class D - Table 11.4-1	F_a	1.0
Site Class D - 21.3(ii)	F_v	2.5
$0.2*(S_{D1}/S_{DS})$	T_0	0.132
S_{D1}/S_{DS}	T_S	0.658
Fundamental Period (12.8.2)	T	Period
Seismic Design Maps or Fig 22-14	T_L	8
Equation 11.4-4 - $2/3*S_{M1}$	S_{D1}	0.6196*
Equation 11.4-2 - F_V*S_1	S_{M1}	0.9294*

REFERENCE	NOTATION	VALUE
Fv (Table 11.4-2)[Used for General Spectrum]	F_v	1.8
Design Maps	S_s	1.412
Design Maps	S_1	0.523
Equation 11.4-1 - F_A*S_S	S_{MS}	1.412*
Equation 11.4-3 - $2/3*S_{MS}$	S_{DS}	0.941*
Design Maps	PGA	0.5
Table 11.8-1	F_{PGA}	1.1
Equation 11.8-1 - $F_{PGA}*PGA$	PGA_M	0.55*
Section 21.5.3	80% of PGA_M	0.440
Design Maps	C_{RS}	0.937
Design Maps	C_{R1}	0.92

RISK COEFFICIENT

Cr - At Perods <=0.2, Cr=C_{RS}	C_{RS}	0.937
Cr - At Periods >=1.0, Cr=C_{R1}	C_{R1}	0.92

Cr - At Periods between 0.2 and 1.0 use trendline formula to complete

Period	Cr
0.200	0.937
0.300	0.935
0.400	0.933
0.500	0.931
0.600	0.929
0.680	0.927
1.000	0.92

* **Code based design value**. See accompanying data for Site Specific Design values.

Mapped values from https://seismicmaps.org/

PROBABILISTIC SPECTRA[1]
2% in 50 year Exceedence

Project No: 23798.1

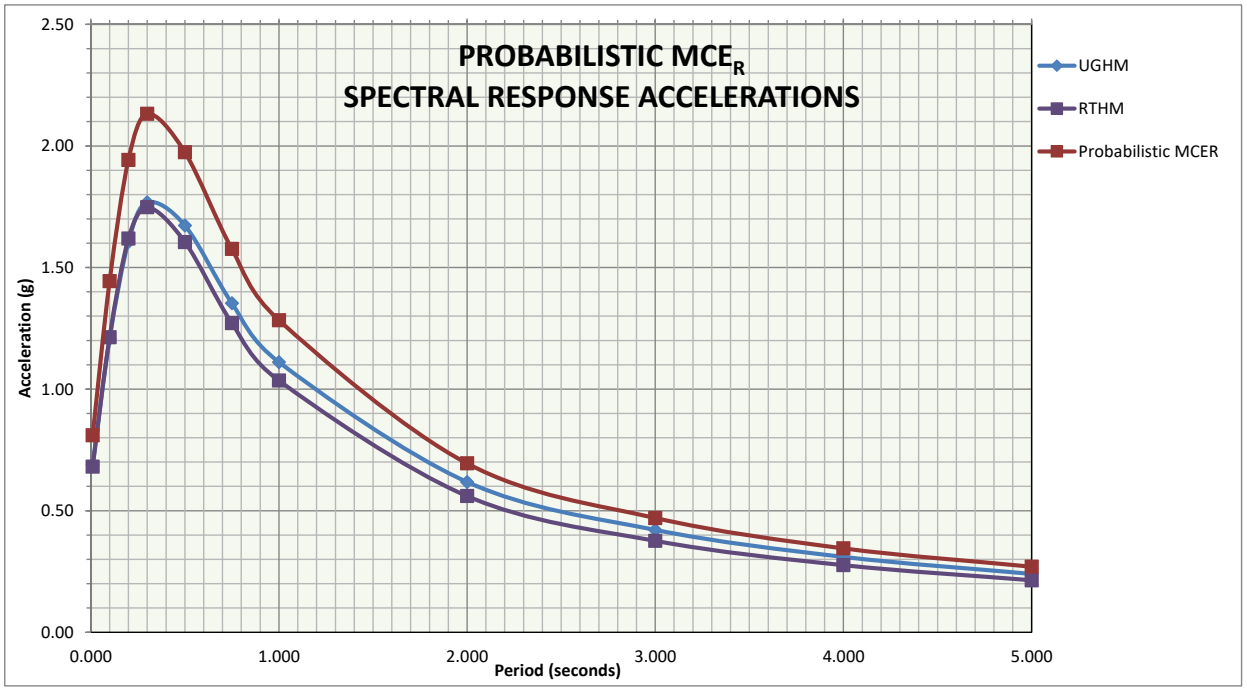
Period	UGHM	RTHM	Max Directional Scale Factor[2]	Probabilistic MCE
0.010	0.690	0.681	1.19	0.810
0.100	1.207	1.213	1.19	1.443
0.200	1.605	1.619	1.20	1.943
0.300	1.768	1.748	1.22	2.133
0.500	1.673	1.605	1.23	1.974
0.750	1.353	1.271	1.24	1.576
1.000	1.111	1.035	1.24	1.283
2.000	0.618	0.560	1.24	0.694
3.000	0.421	0.376	1.25	0.470
4.000	0.310	0.276	1.25	0.345
5.000	0.240	0.214	1.26	0.270

Probabilistic PGA: 0.690

Is Probabilistic $Sa_{(max)}$<1.2F_a? NO

[1] Data Sources:
https://earthquake.usgs.gov/hazards/interactive/
https://earthquake.usgs.gov/designmaps/rtgm/

[2] Shahi-Baker RotD100/RotD50 Factors (2014)



DETERMINISTIC SPECTRUM

Largest Amplitudes of Ground Motions Considering All Sources Calculated using Weighted Mean of Attenuation Equations[1]

Controlling Source: Elsinore / San Jacinto

Is Probabilistic $Sa_{(max)}$<1.2Fa? NO

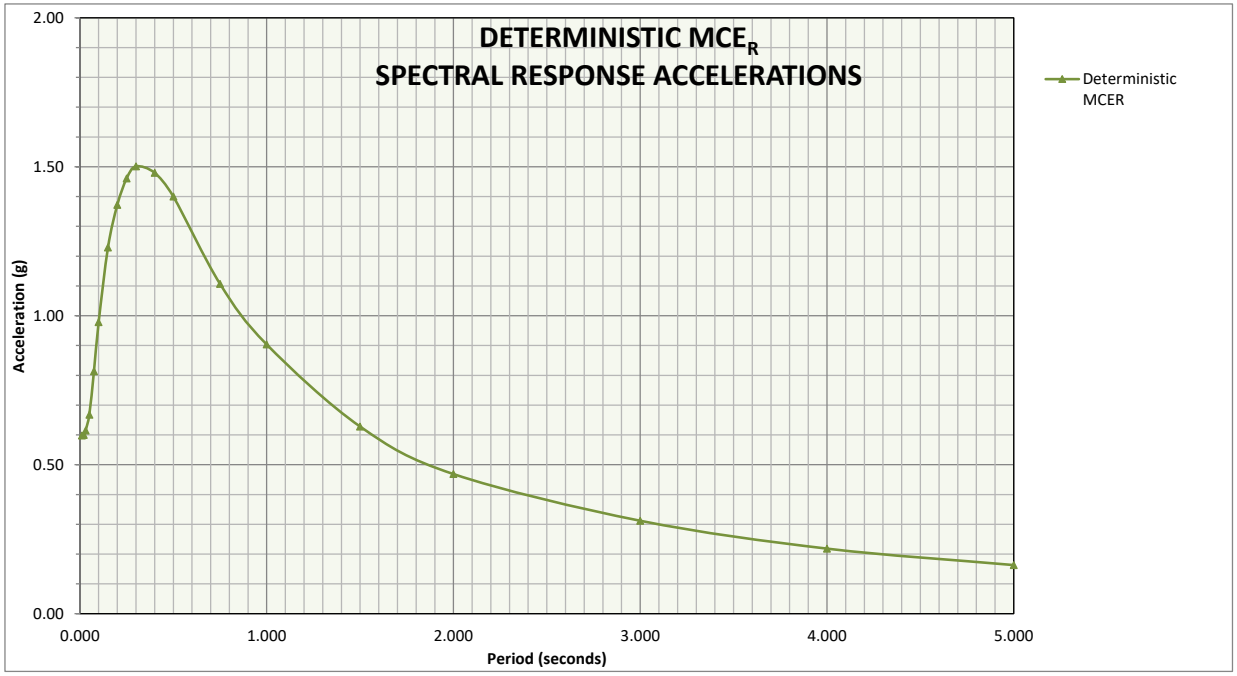
Period	Deterministic PSa Median + 1.σ for 5% Damping	Max Directional Scale Factor[2]	Deterministic MCE	Section 21.2.2 Scaling Factor Applied
0.010	0.502	1.19	0.598	0.598
0.020	0.504	1.19	0.600	0.600
0.030	0.516	1.19	0.615	0.615
0.050	0.561	1.19	0.668	0.668
0.075	0.684	1.19	0.814	0.814
0.100	0.822	1.19	0.978	0.978
0.150	1.024	1.20	1.229	1.229
0.200	1.143	1.20	1.372	1.372
0.250	1.207	1.21	1.461	1.461
0.300	1.231	1.22	1.501	1.501
0.400	1.203	1.23	1.480	1.480
0.500	1.138	1.23	1.400	1.400
0.750	0.893	1.24	1.107	1.107
1.000	0.729	1.24	0.903	0.903
1.500	0.507	1.24	0.628	0.628
2.000	0.378	1.24	0.469	0.469
3.000	0.249	1.25	0.312	0.312
4.000	0.175	1.25	0.218	0.218
5.000	0.129	1.26	0.163	0.163

Project No: 23798.1

Is Determinstic $Sa_{(max)}$<1.5*Fa?	NO
Section 21.2.2 Scaling Factor:	N/A
Deterministic PGA:	~~0.502~~
Is Deterministic PGA >=F_{PGA}*0.5?	NO
Deterministic PGA:	0.550

[1] NGAWest 2 GMPE worksheet and Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) - Time Dependent Model

[2] Shahi-Baker RotD100/RotD50 Factors (2014)



SITE SPECIFIC SPECTRA

Period	Probabilistic MCE	Deterministic MCE	Site-Specific MCE	Design Response Spectrum (Sa)
0.010	0.810	0.598	0.598	0.399
0.100	1.443	0.978	0.978	0.652
0.200	1.943	1.372	1.372	0.915
0.300	2.133	1.501	1.501	1.001
0.500	1.974	1.400	1.400	0.933
0.750	1.576	1.107	1.107	0.738
1.000	1.283	0.903	0.903	0.602
2.000	0.694	0.469	0.469	0.312
3.000	0.470	0.312	0.312	0.208
4.000	0.345	0.218	0.218	0.146
5.000	0.270	0.163	0.163	0.109

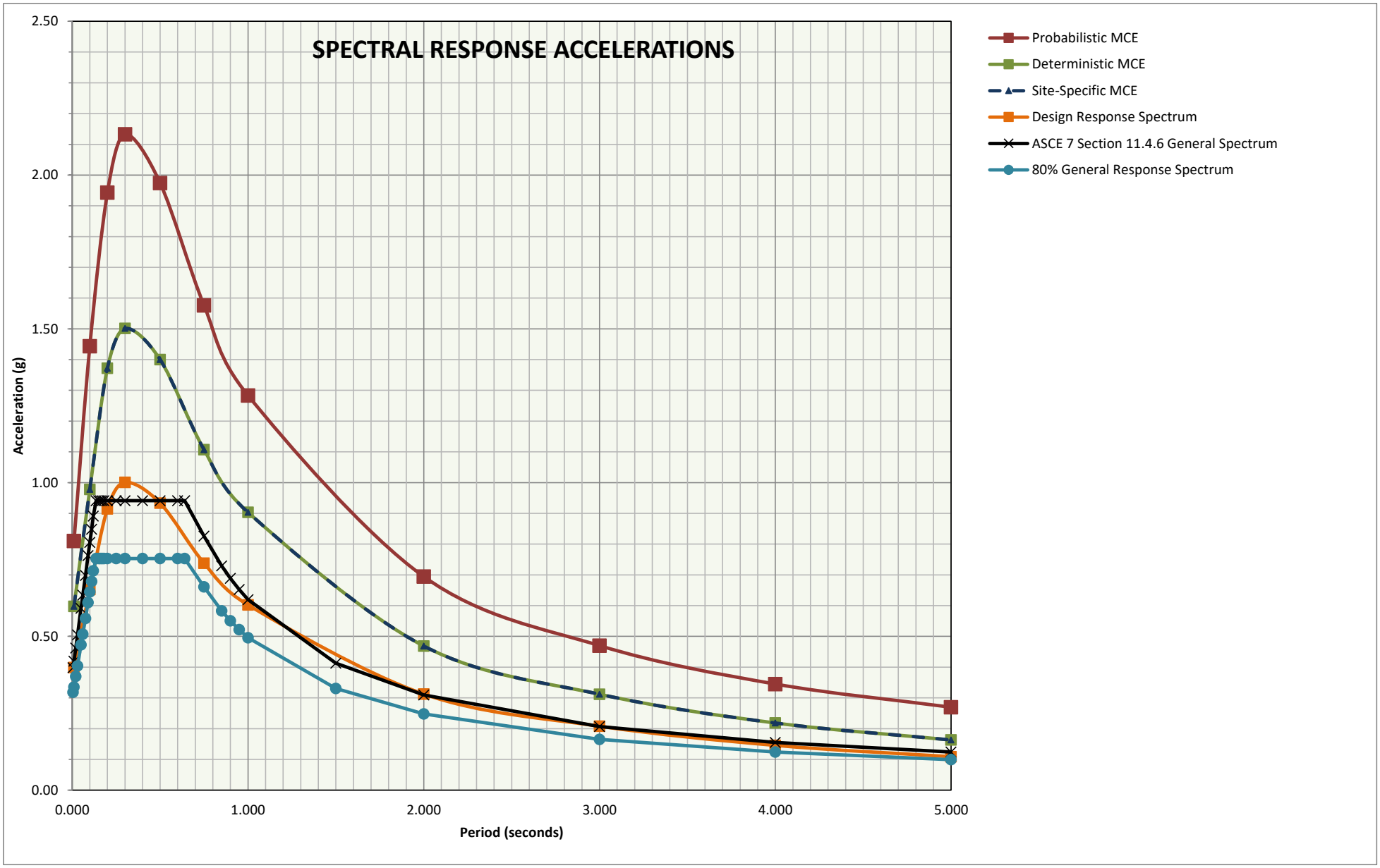
ASCE 7-16: Section 21.4
Site Specific

	Calculated Value	Design Value
SDS:	0.901	0.901
SD1:	0.625	0.625
SMS:	1.351	1.351
SM1:	0.937	0.937
Site Specific PGAm:	0.550	0.550
Site Class:	D measured	

Seismic Design Category - Short* D
Seismic Design Category - 1s* D
* Risk Categories I, II, or III

Period	ASCE 7 SECTION 11.4.6 General Spectrum	80% General Response Spectrum
0.005	0.398	0.318
0.010	0.419	0.336
0.020	0.462	0.370
0.030	0.505	0.404
0.050	0.591	0.473
0.060	0.634	0.507
0.075	0.698	0.559
0.090	0.763	0.610
0.100	0.806	0.644
0.110	0.848	0.679
0.120	0.891	0.713
0.136	0.941	0.753
0.150	0.941	0.753
0.160	0.941	0.753
0.170	0.941	0.753
0.180	0.941	0.753
0.200	0.941	0.753
0.250	0.941	0.753
0.300	0.941	0.753
0.400	0.941	0.753
0.500	0.941	0.753
0.600	0.941	0.753
0.640	0.941	0.753
0.750	0.826	0.661
0.850	0.729	0.583
0.900	0.688	0.551
0.950	0.652	0.522
1.000	0.620	0.496
1.500	0.413	0.330
2.000	0.310	0.248
3.000	0.207	0.165
4.000	0.155	0.124
5.000	0.124	0.099

Project No: 23798.1



Project No: 23798.1

APPENDIX E

Infiltration Test Results

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	APN 331-060-018	Test Date:	April 22, 2022
Project No.:	23798.1	Test Hole No.:	P-1
Soil Classificaiton:	(SM) Silty sand	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	8.0 ft.	Date Excavated:	April 21, 2022
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	9:53 AM	10:23 AM	30	0.50	0.50	42.00	42.25	96.00	96.00	0.25	53.88	120.0
2	10:23 AM	10:53 AM	30	0.50	1.00	42.25	42.50	96.00	96.00	0.25	53.63	120.0
3	10:53 AM	11:23 AM	30	0.50	1.50	42.50	43.00	96.00	96.00	0.50	53.25	60.0
4	11:23 AM	11:53 AM	30	0.50	2.00	43.00	43.50	96.00	96.00	0.50	52.75	60.0
5	11:53 AM	12:23 PM	30	0.50	2.50	43.50	44.00	96.00	96.00	0.50	52.25	60.0
6	12:23 PM	12:53 PM	30	0.50	3.00	44.00	44.50	96.00	96.00	0.50	51.75	60.0
7	12:53 PM	1:23 PM	30	0.50	3.50	44.50	45.00	96.00	96.00	0.50	51.25	60.0
8	1:23 PM	1:53 PM	30	0.50	4.00	45.00	45.50	96.00	96.00	0.50	50.75	60.0
9	1:53 PM	2:23 PM	30	0.50	4.50	45.50	46.00	96.00	96.00	0.50	50.25	60.0
10	2:23 PM	2:53 PM	30	0.50	5.00	46.00	46.50	96.00	96.00	0.50	49.75	60.0
11	2:53 PM	3:23 PM	30	0.50	5.50	46.50	47.00	96.00	96.00	0.50	49.25	60.0
12	3:23 PM	3:53 PM	30	0.50	6.00	47.00	47.50	96.00	96.00	0.50	48.75	60.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	49.00	
H_f	48.50	
ΔH	0.50	
H_{avg}	48.75	
I_t	**0.02**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	APN 331-060-018	Test Date:	April 21, 2002
Project No.:	23798.1	Test Hole No.:	P-2
Soil Classificaiton:	(SC) Clayey sand	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	10.0 ft.	Date Excavated:	April 21, 2022
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	9:58 AM	10:28 AM	30	0.50	0.50	46.50	50.00	120.00	120.00	3.50	71.75	8.6
2	10:28 AM	10:58 AM	30	0.50	1.00	50.00	53.00	120.00	120.00	3.00	68.50	10.0
3	10:58 AM	11:28 AM	30	0.50	1.50	48.00	51.00	120.00	120.00	3.00	70.50	10.0
4	11:28 AM	11:58 AM	30	0.50	2.00	51.00	54.00	120.00	120.00	3.00	67.50	10.0
5	11:58 AM	12:28 PM	30	0.50	2.50	48.00	50.50	120.00	120.00	2.50	70.75	12.0
6	12:28 PM	12:58 PM	30	0.50	3.00	50.50	53.00	120.00	120.00	2.50	68.25	12.0
7	12:58 PM	1:28 PM	30	0.50	3.50	48.00	51.00	120.00	120.00	3.00	70.50	10.0
8	1:28 PM	1:58 PM	30	0.50	4.00	51.00	53.50	120.00	120.00	2.50	67.75	12.0
9	1:58 PM	2:28 PM	30	0.50	4.50	48.00	51.00	120.00	120.00	3.00	70.50	10.0
10	2:28 PM	2:58 PM	30	0.50	5.00	51.00	53.00	120.00	120.00	2.00	68.00	15.0
11	2:58 PM	3:28 PM	30	0.50	5.50	48.00	50.50	120.00	120.00	2.50	70.75	12.0
12	3:28 PM	3:58 PM	30	0.50	6.00	50.50	53.00	120.00	120.00	2.50	68.25	12.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	69.50	
H_f	67.00	
ΔH	2.50	
H_{avg}	68.25	
I_t	**0.09**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

N/A

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

PHASE I ENVIRONMENTAL SITE ASSESSMENT
PROPOSED INDUSTRIAL DEVELOPMENT
7.5± ACRES OF VACANT LAND
APN 331-060-018
SEC ETHANAC AND EVANS ROADS
MENIFEE
RIVERSIDE COUNTY, CALIFORNIA

PROJECT NO. 23798.2
MARCH 17, 2022

Prepared For:

Compass Danbe Real Estate Partners II, LLC
523 Main Street
El Segundo, California 90245

Attention: Ms. Vicky Valenzuela

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

March 17, 2022

Compass Danbe Real Estate Partners II, LLC
523 Main Street
El Segundo, California 90245

Project No. 23798.2

Attention: Ms. Vicky Valenzuela

Subject: Phase I Environmental Site Assessment
Proposed Industrial Development
7.5± Acres of Vacant Land
APN 331-060-018
SEC Ethanac and Evans Roads
Menifee, Riverside County, California

Attached herewith is the Phase I Environmental Site Assessment (ESA) conducted by this firm for the subject property located in Menifee, California.

This Phase I ESA was planned and executed based upon a scope of services generally outlined in our Proposal dated December 27, 2021, and other written and verbal communication.

We appreciate the opportunity to provide this environmental assessment for the subject property. If you have any questions or comments regarding this assessment, please do not hesitate to contact this firm at your convenience.

LOR Geotechnical Group, Inc.

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EXECUTIVE SUMMARY

This firm conducted a Phase I Environmental Site Assessment (ESA) for a proposed industrial development located at the southeast corner of the intersection at Ethanac and Evans Roads in Menifee, California. This Phase I ESA was conducted in conformance with American Society for Testing and Materials (ASTM) E1527-13, and All Appropriate Inquiries (AAI) set forth in 40 CFR (Code of Federal Regulations) part 312. This Phase I ESA also incorporates the procedures set forth in the recently approved ASTM E1527-21.

Based on our interviews, subject property reconnaissance, and review of historical aerial photographs and topographic maps, the subject property was vacant land dating back to the early 1900s, with dryland and/or irrigated farming dating back to at least 1938, continuing to the present day. Relatively recent farming practices have been reportedly performed without the use of chemicals, including fertilizers, herbicides, and pesticides.

There are three sites, not including the subject property, listed in environmental regulatory databases within 1 mile of the subject property. Based on our research and Vapor Encroachment Screen (VES), no environmentally impaired properties have current or former releases of hazardous substances and/or petroleum products that are known to have migrated to and/or impacted the subject property, and therefore, a vapor encroachment condition (VEC) can be ruled out for the subject property.

The agricultural farming use of the subject property is an environmental concern, however, it is not anticipated to have an adverse environmental impact to the planned industrial development of the subject property.

The only way to confirm our opinion regarding the impact to soils at the subject property from agricultural farming use would be to perform soil sampling and subsequent laboratory analysis and data evaluation for arsenic and organochlorine pesticides.

This assessment has revealed no RECs, CRECs, or significant data gaps in connection with the subject property.

INTRODUCTION

During December 2021 to March 2022, a Phase I ESA was conducted by this firm for a proposed industrial development, Assessor's Parcel Number (APN) 331-060-018, located at the southeast corner of the intersection at Ethanac and Evans Roads in Menifee, Riverside County, California. The subject property is currently vacant land with agricultural use (farming), and is planned for industrial development.

The Phase I ESA was conducted in conformance with the Standard Practice for Environmental Site Assessments: Phase I ESA Process, ASTM E1527-13, and AAI set forth in 40 CFR Part 312. The purpose was to identify RECs that may be associated with the subject property. A REC means: (1) the presence of hazardous substances or petroleum products in, on, or at the subject property due to a release to the environment; (2) the likely presence of hazardous substances or petroleum products in, on, or at the subject property due to a release or likely release to the environment; or (3) the presence of hazardous substances or petroleum products in, on, or at the subject property under conditions that pose a material threat of a future release to the environment. A controlled recognized environmental condition (CREC) is a REC affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities with hazardous substances or petroleum products allowed to remain in place subject to implementation of required controls (for example, activity and use limitations or other property use limitations). A historical recognized environmental condition (HREC) is a previous release of hazardous substances or petroleum products affecting the subject property that has been addressed to the satisfaction of the applicable regulatory authority or authorities and meeting unrestricted use criteria established by the applicable regulatory authority or authorities without subjecting the subject property to any controls (for example, activity and use limitations or other property use limitations). An HREC is not a REC. A de minimis condition is a condition related to a release that generally does not present a threat to human health or the environment and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. A condition determined to be a de minimis condition is not a REC nor a CREC. This Phase I ESA also incorporates the procedures set forth in the recently approved ASTM E1527-21, which is pending approval from the United States Environmental Protection Agency for its compliance with AAI.

The approximate location of the subject property within its regional setting is presented on an Index Map (Figure 1).

The findings of our Phase I ESA, as well as our opinions, conclusions, and recommendations, are presented within the following sections of this report.

NON-SCOPE CONSIDERATIONS

The following list (not all-inclusive) of environmental issues are outside the scope of ASTM E1527-13 and E1527-21, and AAI:

- Asbestos-containing building materials unrelated to releases into the environment;
- Biological agents;
- Cultural and historic resources;
- Ecological resources;
- Endangered species;
- Flood zone;
- Health and safety;
- High voltage power lines or other sources of electromagnetic radiation;
- Indoor air quality unrelated to releases of hazardous substances or petroleum products into the environment;
- Industrial hygiene;
- Lead-based paint unrelated to releases into the environment;
- Lead in drinking water;
- Methane;
- Mineral resources;
- Mold or microbial growth conditions;
- Natural hazards;
- Naturally-occurring radon;
- PCB (polychlorinated biphenyl)-containing building materials (including interior fluorescent light ballasts, paint, and caulk);
- Regulatory compliance;
- Substances not defined as hazardous substances (including some substances referred to as emerging contaminants) unless or until such substances are classified as a CERCLA (Comprehensive Environmental Response, Compensation and Liability Act) hazardous substance; and
- Wetlands.

METHODOLOGY AND PROCEDURES

The following list is a summary of the methodology and procedures used during this Phase I ESA:

- Previously prepared professional reports, including environmental, geotechnical, etc., were reviewed as available for the subject property and/or adjoining properties.

- Per ASTM E1527-13 and E1527-21, and AAI, User provided information, as available, was evaluated with respect to subject property history, usage, and environmental concerns.

- A general review of the physical setting of the subject property, including topography, geology, and groundwater hydrology, was performed. This review, in part, provides information regarding the potential for groundwater to be contaminated, the potential pathways for contaminant transport, and the potential for a vapor encroachment condition.

- Historical maps, aerial photographs, fire insurance maps, city directory information, and other records and information were researched and examined, as available and warranted, to investigate the use of the subject property and surrounding area.

- As available, person(s) knowledgeable about the subject property were interviewed to obtain any known information regarding property usage and potential environmental concerns.

- Concurrent with our public and governmental agency interviews and literature research, a reconnaissance of the subject property and observations of adjoining properties were conducted. The reconnaissance was conducted in order to determine current uses of the subject property and adjoining properties and the potential for soil and/or possible groundwater contamination based on aboveground visual observation.

- During this Phase I ESA, public regulatory agencies, potentially including environmental, building, etc., were contacted directly or online research for information regarding permits, underground storage tanks (USTs), hazardous materials incidents, and general information about the subject property and where

warranted, adjoining properties, to ascertain present and past uses with respect to environmental concerns.

- Federal, state, local, tribal, and proprietary lists and databases were reviewed to ascertain the presence of known environmentally impaired sites at the subject property or within the immediate area, and to determine their impact, if any, to the subject property.

- As part of the Phase I ESA, a Vapor Encroachment Screen was conducted to evaluate whether a vapor encroachment condition exists, based on the information obtained during the Phase I ESA.

- More details regarding the above methodology and procedures are described in other sections of this report.

USER PROVIDED INFORMATION

ASTM E1527-13 and E1527-21 defines a User as the party seeking to use Practice E1527 to complete an environmental site assessment of the (subject) property. A User may include, without limitation, a potential purchaser of (subject) property, a potential tenant of (subject) property, an owner of the (subject) property, a lender, or a property manager.

Under ASTM E1527-13 and E1527-21, and AAI, specific tasks are assigned to the User that will help identify the possibility of RECs in connection with the subject property. AAI requires these tasks be performed by or on behalf of a party seeking to qualify for a landowner liability protection to CERCLA liability. These tasks do not require the technical expertise of an Environmental Professional, and are generally not performed by Environmental Professionals performing a Phase I ESA. The User may provide the information gathered from these tasks, including the following:

- Any environmental cleanup liens against the subject property that are filed or recorded under federal, tribal, state or local law;

- Any activity and land use limitations (AULs), such as engineering controls, land use restrictions, or institutional controls that are in place at the subject property and/or have been filed or recorded in a registry under federal, tribal, state, or local law;

- Specialized knowledge or experience (that is material to RECs in connection with the property) of the User related to the subject property or nearby properties (for example, is the User involved in the same line of business as the current or former occupants of the subject property or an adjoining property so that the User would have specialized knowledge of the chemicals and processes used by this type of business);

- Relationship of the purchase price to the fair market value of the subject property if it were not contaminated (reason for significantly lower purchase price, such as contamination is known or believed to be present at the subject property);

- Commonly known or reasonably ascertainable information about the subject property that would help the Environmental Professional to identify conditions indicative of releases or threatened releases (such as the past uses of the subject property, specific chemicals that are present or once were present at the subject property, spills or other chemical releases that have taken place at the subject property, and any environmental cleanups that have taken place at the subject property);

- Any obvious indicators that point to the presence or likely presence of contamination at the subject property, based on the knowledge and experience of the User related to the subject property; and

- Other information, including the reason why the Phase I ESA is required and/or is being performed, the type of property and type of property transaction (sale, purchase, exchange, etc.), the complete and correct address for the subject property, the scope of services desired for the Phase I ESA, identification of all parties who will rely on the Phase I ESA report, identification of the site contact and how the contact can be reached, any special terms and conditions which must be agreed upon by the Environmental Professional, and any other knowledge or experience with the subject property that may be pertinent to the Environmental Professional (for example, copies of any available prior environmental site assessment reports, documents, correspondence, etc., concerning the subject property and its environmental condition).

A User Questionnaire was completed by one of the current owners (a User) of the subject property. The information provided in the completed questionnaire does not suggest any RECs, HRECs, or CRECs are associated with the subject property. Farming is indicated

to have occurred at the subject property since 2014. No environmental cleanups nor environmental site assessments have been conducted since ownership began in 1988, per the completed questionnaire. A copy of the completed User Questionnaire is provided in Appendix A.

Environmental Cleanup Liens and Activity and Use Limitations

Under AAI and ASTM E1527-13, a search for environmental cleanup liens and AULs must be conducted, typically by a User. We were not provided this information by a User. However, the subject property, whose researched historical use has been vacant farm land, did not appear in the state and/or federal liens, deed, or activity/use limitation databases in The Environmental Data Resources, Inc. (EDR) Radius Map™ Report with Geocheck® (Appendix F), and no records were found for the subject property on file with the County of Riverside Department of Environmental Health (CRDEH), which suggests there are no environmental cleanup liens or AULs associated with the subject property.

PHYSICAL SETTING

Topography

The subject property consists of relatively planar land that is relatively flat, with a very gentle fall to the northwest. Elevations across the subject property are estimated to be approximately 1,418 to 1,419 feet above mean sea level (amsl).

Regional Geology

The subject property lies along the north-central portion of the Perris block of the northern Peninsular Ranges geologic province of southern California. While the Perris block is considered to be a relatively stable structural block, it is bounded by active faults. These faults include the Elsinore fault zone on the west, the San Jacinto fault zone on the east, and the Cucamonga fault zone on the north. The Perris block is underlain by rocks of the Peninsular Ranges batholith, a very large mass of crystalline igneous rocks of Cretaceous age and with no known floor, and by prebatholithic metasedimentary and metavolcanic rocks of older ages.

The Perris block has a series of erosional surfaces, marked by low topographic relief and capped with unconsolidated alluvial sediments stripped from the surrounding highlands. The subject property and immediate surrounding properties were mapped by the California

Division of Mines and Geology as being underlain by deposits of old alluvial fan deposits of late to middle Pleistocene age, described as reddish brown, gravel and sand alluvial fan deposits, indurated, and highly dissected. These deposits, in places, include thin layers of Holocene age (Morton et al., 2003).

The interior of the Perris Plain is considered to be relatively stable with few known active faults. However, this plain is bounded by active faults. These include the Elsinore fault zone on the west, the San Jacinto fault zone on the northeast, the San Andreas fault zone on the north, and the Agua-Tibia fault zone on the south. As the subject property is located near the western margin of the Perris Plain, the Elsinore fault is the closest known active fault in relation to the subject property. At its closest approach, the Elsinore fault is located approximately 9 miles southwest of the subject property (USGS, 2022a).

Groundwater Hydrology

In order to estimate the approximate depth to groundwater in the local area of the subject property, a search was conducted for local groundwater well level measurements within the water well database information provided in the California Department of Water Resources (CDWR) Water Library Data website (CDWR, 2022).

The closest well in the CDWR database is an Eastern Municipal Water District (EMWD) well, State Well No. 05S03W16K001S (Well “EMWD14429”), located approximately 0.4 mile to the south-southwest of the subject property. Groundwater level data for this well was limited to one reading in October 2021. A measuring point elevation of 1,425± feet amsl was reported. The depth to groundwater from the measuring point was approximately 62 feet (elevation of 1,363± feet amsl). Two other wells are located within approximately 0.6 mile of the subject property. One of these wells, State Well No. 05S03W17A001S, located west-southwest of the subject property, has groundwater level data limited to one reading in 1995. A measuring point elevation of 1,424± feet amsl was reported. The depth to groundwater provided was 22 feet bgs (elevation of 1,402± feet amsl). The second of these wells, Well “EMWD12765” (no State Well No. reported), located south-southwest of the subject property, has groundwater level data ranging from October 2011 to October 2012. A measuring point elevation of 1,428± feet amsl was reported. The depth to groundwater from the measuring point has ranged from approximately 66 to 70 feet (elevations from 1,358± to 1,362± feet amsl).

Based on the above groundwater elevations and subject property elevation around 1,418 feet amsl, groundwater beneath the subject property is anticipated to be present at

depths ranging from approximately 16 to 60 feet bgs. The most recent groundwater level data suggests the current depth to groundwater beneath the subject property is on the order of 50 to 60 feet bgs.

Based on the fall in local ground surface topography towards the San Jacinto River approximately 1.5 miles northwest of the subject property, groundwater beneath the subject property is estimated to flow in a northwesterly direction.

HISTORY OF SITE USAGE

To obtain a history of previous subject property usage, a search was conducted as warranted and resources were available for historical fire insurance and topographic maps or images, aerial photographs or images, County Assessor's parcel information, building records, and city directory information. An attempt was made to contact persons knowledgeable of the use and history of the subject property.

Sanborn Fire Insurance Maps

No coverage of historical fire insurance maps was available for the subject property. The Certified Sanborn® Map Report from EDR, which indicates the subject property is unmapped, is provided in Appendix B.

Historical Topographic Maps

Online historical topographic map images of the subject property and surrounding properties were reviewed for the years 1901, 1942, 1943, 1953, 1954, 1968, 1973, 1975, 1979, 1985, 2012, 2015, and 2018 (NETR, 2022; USGS, 2022b).

The 1901 map image is derived from a map at a scale of 1:125,000. This map image appears to show the subject property as vacant land along the south side of an east-west road along the alignment for present day Ethanac Road. There is a residence-sized structure shown near the subject property and along the south side of Ethanac Road. It appears this structure is offsite to the west and across the present day Evans Road. Otherwise, the surrounding properties are indicated to be vacant land. Approximately 1,950 feet to the east is a north-south road along the present day I-215 Highway.

The 1942 and 1943 map images, derived from maps at a scale of 1:62,500, show the subject property and immediate surrounding properties as vacant land. The residence-sized structure previously shown near and west of the subject property is absent. Approximately 930 feet to the southeast, a linear drainage feature is shown, likely an artificial, earthen channel. Within the local vicinity of the subject property are several residence-sized structures, including three along the artificial drainage channel.

The 1953, 1954, and 1968 map images are essentially the same, derived from maps at a scale of 1:24,000, and show the subject property and surrounding properties as vacant land. The road along Ethanac Road bordering the subject property to the north is indicated to be a paved road. The road to the east along the present day I-215 Highway is labeled with 395 (United States Route Highway).

The 1973 and 1975 map images are essentially the same, derived from maps at a scale of 1:24,000, and show the subject property and surrounding properties as vacant land. Frontage roads along the present day Case Road and Encanto Drive run along side United States Route 395 and flare out to meet Ethanac Road, likely to accommodate future highway on- and off-ramps.

The 1979 and 1985 map images are essentially the same, derived from maps at a scale of 1:24,000, and show the subject property and surrounding properties as vacant land. A dirt road is depicted leading south from Ethanac Road along the present day Evans Road, bordering the subject property to the west. Another dirt road (Barnett Road) is depicted leading north from Ethanac Road approximately 800 feet east-northeast of the subject property and near the highway frontage road (Case Road).

The map images from 2012, 2015, and 2018 are essentially the same, derived from maps at a scale of 1:24,000. These map images generally do not show structural features. Based on the infrastructure shown, increased structural development has occurred in areas away from the subject property, but within the local vicinity.

Aerial Photograph Review

Digital aerial photograph images provided by EDR, from 1938, 1949, 1953, 1961, 1967, 1978, 1985, 1989, 1997, 2002, 2006, 2009, 2012, and 2016, at a scale of roughly 1"=500', were reviewed to investigate the past use of the subject property and surrounding properties. Google Earth Pro computer program recent (2002 to 2021) and online (NETR, 2022) historical digital aerial images were used to enhance our review and/or provide

supplementary review. Copies of the historical aerial photograph images provided by EDR with the approximate boundaries of the subject property are provided in Appendix C.

A brief summary of the subject property and surrounding conditions during the various times, largely as reflected in the EDR aerial photograph images, is given below.

The EDR 1938 digital aerial photograph image shows the subject property and surrounding properties are vacant land that may be under dryland farming. An east-west dirt road is located along the present day Ethanac Road near and north of the subject property. A north-south linear feature, apparently the boundary transition between fields, is evident along the present day Evans Road. Approximately 750 feet to the southeast is an apparent artificial, earthen drainage channel which heads southwest, and then south-southwest.

The EDR 1949 digital aerial photograph image shows the subject property and adjoining properties largely the same as in the 1938 aerial image. However, the properties to the northwest, north, and northeast beyond the present day Ethanac Road are being farmed with an irrigated crop(s). Among these fields for irrigated crop(s) are small, narrow, artificial, earthen drainage channels, possibly irrigation or storm water related. The dirt road along Ethanac Road has been widened.

The EDR 1953 digital aerial photograph image shows the subject property and immediately surrounding properties as mostly dry farm land with crops recently harvested. The linear feature along the present day Evans Road is more pronounced. The property to the north and northeast across the dirt road along Ethanac Road either has a dryland crop present before harvest or may be fallow. The acreage of irrigated crops has been reduced generally to the north beyond Ethanac Road. The previously shown artificial, earthen drainage channel to the southeast appears largely gone, and most of it is farmed over with dryland crop(s).

The EDR 1961 digital aerial photograph image shows the subject property and adjacent properties to the east, southeast, and south as fallow dry farm land. Linear patterns of vegetation are evident along the former drainage channel to the southeast. The linear feature along Evans Road now appears to be a narrow, dirt road.

The EDR 1967 digital aerial photograph image shows the subject property and most or all surrounding properties with dryland crop(s). The dirt road along Ethanac Road is widened, apparently in concert with road construction over 600 feet to the east and northeast along Ethanac and Case Roads.

The EDR 1978 digital aerial photograph image shows the subject property and surrounding properties with irrigated crops. Ethanac Road is now paved along the north side of the subject property. The dirt road along Evans Road is widened and more distinct. Over 1,000 feet to the west of the subject property and south of Ethanac Road, two single-family residences have been built or may still be under construction.

The EDR 1985 digital infrared aerial photograph image is of somewhat poor to moderate quality, but the subject property and adjacent properties to the east, southeast, and south have irrigated crops present. There appears to be an artificial, earthen drainage channel between the subject property and dirt road along Evans Road to the west, across which is now an apparent horse ranch with race track, corral areas, and two structures, likely including a single-family residence and barn or stables. Properties generally north of Ethanac Road appear to be under dryland farming. Approximately 670 feet to the east-northeast of the subject property, near and northwest of the intersection at Ethanac and Case Roads, appears to be a roughly trapezoidal earthen basin of some kind. Over 800 feet to the southeast and south-southeast of the subject property there appear to be residences that have been constructed.

The EDR 1989 digital infrared aerial photograph image is of better quality than the previous image. The subject property and surrounding properties appear to be largely the same as previously shown. The properties generally north of Ethanac Road have irrigated crops. The earthen basin to the east-northeast near the intersection at Ethanac and Case Roads has been truncated, is now more triangular, and apparently has water in it.

The EDR 1997 digital aerial photograph image shows the subject property and immediate surrounding properties largely the same as previously shown. The subject property and adjacent properties to the east, southeast, and south are under dryland farming. The adjoining properties across Ethanac Road to the northwest, north, and northeast appear to be fallow. The basin to the east-northeast has expanded to the north. Over 1,300 feet to the east there appears to have been a gasoline station built, situated along the west side of a new on-ramp associated with the I-215 Highway.

The EDR 2002 digital infrared aerial photograph image shows the subject property and immediate surrounding properties largely the same as previously shown. The subject property and adjoining properties to the north, northeast, east, southeast, south, and southwest appear fallow. The basin to the east-northeast appears filled in.

The EDR 2006 digital aerial photograph image shows the subject property and immediate surrounding properties largely the same as previously shown. All properties, including the subject property, shown previously with farming appear fallow.

The EDR 2009 digital aerial photograph image shows the subject property and adjoining properties to the north, east, southeast, and south as bare soil. However, there are soil furrows running east to west across the subject property and adjacent property to the east, likely for an irrigated crop. The horse ranch to the west across Evans Road has added structures, including apparent canopies and a large, rectangular structure. There is an irrigated crop field to the northwest across Ethanac Road, likely alfalfa. Over 700 feet to the east-northeast, the south end of a retail center (present day “Perris Crossing”), which appears to include a gasoline station, is now present, extending to the north. This retail center, along the west and northwesterly sides of Case Road, is largely complete, but portions are still under construction. Ethanac Road is a widened, divided road coincident and just west of this newly constructed retail center. Adjacent to the west of the far south end of the retail center, and approximately 370 feet northeast of the subject property, is an apparent artificial, earthen channel, likely for storm water drainage. There are concrete features at the west and east ends of this channel which is oriented roughly east to west.

The EDR 2012 digital aerial photograph image shows the subject property and adjoining properties essentially the same as previously shown. Most of the subject property and adjacent property to the east, excluding the south end, appear fallow. The far south end of the subject property and adjacent properties to the east, southeast, and south have an irrigated crop present, possibly alfalfa. Adjoining properties to the southwest and northwest appear to have or recently had irrigated crops. The storm water channel previously noted to the northeast appears to be full of water, and appears wider than previously shown.

The EDR 2016 digital aerial photograph image shows the subject property and adjoining properties largely the same as previously shown. Most of the subject property, excluding the south end, is either fallow or has an irrigated crop, possibly alfalfa. The south end of the subject property and extending offsite to the south has an irrigated row crop present. Another irrigated row crop is present across Evans Road to the southwest. Adjacent to the east of the subject property, and apparent extending beneath and daylighting on the north side of Ethanac Road, is a wide, artificial, earthen channel for storm water drainage. Along both sides of the channel are apparent gravel-covered, dirt access roads. Concrete head wall structures are located along this channel near Ethanac Road.

The Google Earth Pro digital aerial images from 2016 to 2021 show the subject property and adjoining properties largely the same as previously shown. The subject property and adjoining properties to the south, southwest, and northwest underwent changes in vegetation patterns, and were either bare soil, fallow, and/or under dryland or irrigated crop farming. The adjoining or nearby properties to the north, northeast, and east beyond the storm drain channels have remained vacant land, mostly with bare soil. By February 2018, two concrete drive ramp features were added to the wide earthen storm water channel adjacent to the east of the subject property and across Ethanac Road. Between February 2018 and August 2019, road work was performed along Ethanac Road, including widening, dividing, and partial improvement of the paved roadway. By August 2018, a gasoline station was constructed approximately 0.25 mile east-northeast of the subject property between Ethanac Road, Case Road, and off-ramp for the I-215 Highway.

County Assessor's Parcel, Property, and Ownership Information

The subject property is defined by APN 331-060-018, comprising a total of 7.51 acres of property. This parcel is listed as residential land (Homesite/5-19.9 acres) with no associated address (County of Riverside Assessor, 2022). The transfer history suggests the subject property was last purchased in 1988. No property owner name/entity information was available.

A copy of the Assessor's Parcel Map is presented on Figure 2 with the approximate boundaries of the subject property.

Building Permit Records

Based on historical research, including topographic map and aerial photograph images, and recent site reconnaissance, the subject property has historically been vacant land with no known permanent structures or buildings present. An online search of County of Riverside building records yielded no records (County of Riverside, 2021; County of Riverside Transportation and Land Management Agency, 2021).

City Directory Information

Historical city directory information was not researched, as the subject property and surrounding properties have been largely vacant throughout their researched history, except for the horse ranch to the west across Evans Road.

Interview

On December 31, 2022, Mr. Mathew L. Hunt with this firm submitted interview questions by email to the real estate broker for the property transaction for the subject property. On January 3, 2022, one of the current subject property owners, Mr. Joong H. Choh, emailed responses to these questions. Based on his answers, the subject property was purchased in 1988, with periodic farming of wheat with no herbicides or pesticides used. Mr. Choh stated there are no onsite wells. He is unaware of underground tanks or structures at the subject property, and knows of no environmental contamination issues at the subject property or surrounding properties. Mr. Choh provided us with the contact information for Mr. Donald Bean, the onsite tenant farmer, if we needed more information regarding onsite farming practices.

On January 5, 2022, Mr. Mathew L. Hunt with this firm interviewed Mr. Cassidy Bean, son of Mr. Donald Bean. Mr. Cassidy Bean indicated no fertilizer is used onsite for their wheat crops grown onsite which is sometimes irrigated. He indicated the previous onsite farmer, Mr. Clyde Smith, farmed wheat dating back to the 1970s, possibly earlier. Reportedly, Mr. Smith used no chemicals for his wheat crop.

SITE RECONNAISSANCE

Site reconnaissance was conducted by Mr. Mathew L. Hunt with this firm on January 13, 2022. To orient our subject property reconnaissance, a copy of a recent color aerial image was obtained for our use. This Recent Color Aerial Image with approximate site boundaries is presented on Figure 3.

The subject property encompasses approximately 7.5 acres at the southeast corner of the intersection at Ethanac and Evans Roads, and is vacant, undeveloped land. The south end, approximately the lower 1/6th of the subject property, is the north end of a field with an alfalfa crop. This crop seems generally healthy with sporadic evidence of stressed plants. Along the north side of the alfalfa field onsite is a strip of a high concentrations of weeds (mostly common mallow). The remainder of the subject property is disced soil in various states, some very recently disced and some with weeds growing. This area of the subject property is mostly bare soil at ground surface. Along the east subject property boundary, where it borders an area that includes an open, wide storm water drainage channel, is an approximate 6-foot high metal chain-link fence. Tumbleweeds are growing against this fence. Along this fence are survey stakes and yellow paint.

The only evident onsite utility is underground telecommunications running through the far north end and along the roadway for Ethanac Road. Other utilities were observed to be located along the periphery of the subject property, including utility poles and lines along the west boundary, an approximate 1-foot white plastic irrigation pipe along the west boundary, and some type of apparent vent structure, possibly related to a water utility of some type, observed along the curving northeast boundary among tumbleweeds approximately 62 feet south of the paved road for Ethanac Road. A similar vent structure was observed along a sidewalk on the north side of Ethanac Road. A pole-mounted, electrical transformer was observed on a utility pole with no signs of leakage near the southwest corner of the subject property. A sign for recycled water near this pole and the 1-foot irrigation line suggests the irrigation line may be utilizing recycled water.

Small amounts of non-hazardous trash and debris were observed onsite, mostly windblown, but some illegally dumped, including a tire, paper, plastic, glass, styrofoam, cardboard, wood, metal, and small pieces of concrete and asphalt.

No evidence of the following were observed onsite, except as mentioned above: petroleum products, solvent degreasers, aboveground storage tanks, underground storage tanks, heating oil use, drums, unidentified containers with hazardous substances/petroleum products, pools of liquid likely to contain hazardous substances/petroleum products, polychlorinated biphenyls (PCBs), stressed vegetation, fill areas with solid waste, sumps, pits/ponds/lagoons, wells, and stormwater and/or wastewater generated from industrial/manufacturing processes. No strong, pungent, or noxious odors were detected.

Adjoining Properties

The subject property is located in a historically rural agricultural area that has begun replacement over time with commercial and high density residential developments. Ethanac Road, a divided, 4-lane, asphalt concrete-paved, partially improved roadway borders the subject property to the north. Adjacent to the west is a strip of property that includes a drainage or low area, utility poles and lines, and an approximate 1-foot white plastic irrigation line partially exposed, followed by a dirt road along Evans Road. During our reconnaissance of the subject property, drainage water was actively bubbling up into to small drainage channels which merged into one, flowing to the north to a low-lying area within this strip of offsite property. The source of this water appeared to be wash or rinse water from an active wash rack at the horse ranch (“Rancho Fortunado”) across Evans Road to the west of the subject property. The low-lying area within the strip of offsite property likely accumulate storm water during significant precipitation events.

These drainage waters do not appear to reach the subject property. A 5-quart plastic container with approximately 1 gallon of waste oil and no associated soil staining or other signs of leakage was observed towards the north end of the strip of offsite property. To the southwest across Evans Road and adjacent to the south of the subject property are alfalfa crops. Adjacent to the east is a wide storm water drainage channel, followed by vacant land. This wide storm drainage channel emerges north of Ethanac Road, across from the subject property. Another, smaller storm drain channel or possibly narrow basin is present to the northeast and across Ethanac Road. The properties to the north and northeast across Ethanac and beyond the storm water drainage channels are vacant land. To the northwest across Ethanac Road and the wide storm water channel is a field with an irrigated crop, likely alfalfa.

Color photographs of the subject property and adjoining properties are provided in Appendix D.

REGULATORY AGENCY RECORDS REVIEW

For records relating to environmental compliance and hazardous materials/waste within the County of Riverside, the CRDEH generally is the lead agency. The California State Water Quality Control Board, Santa Ana Region (CRWQCB-SAR) or CRDEH may be the lead agency for soil and/or groundwater investigations and remediation. These agencies were contacted, directly or online, for records they may have for the subject property and/or nearby properties. Online South Coast Air Quality Management District (SCAQMD) and California DTSC records were also searched.

County of Riverside Department of Environmental Health

On December 28, 2021, a request was emailed to the CRDEH to review records for an address range (26300-26700) along Ethanac Road, inclusive of the address at 26481 Ethanac Road for the offsite horse ranch to the west across Evans Road and coincident with the subject property and nearby properties. In a letter dated January 12, 2022, the CRDEH indicated no records were found. A copy of the CRDEH records response letter is provided in Appendix E.

California Regional Water Quality Control Board - Santa Ana Region

The California State Water Resources Control Board maintains the online GeoTracker database, which includes CRWQCB-SAR records for: 1) cleanup sites, including

leaking underground storage tank (LUST) sites, cleanup program sites, military cleanup sites, and California Department of Toxic Substances Control (DTSC) cleanup sites; 2) permitted facilities, including waste discharge requirements sites, permitted USTs, DTSC hazardous waste sites, land disposal sites, irrigated lands regulatory program sites, and oil/gas sites; and 3) other sites, including project sites, non-case information sites, sampling points - public, and field points. This database was searched for records that may pertain to the subject property and adjoining properties (California State Water Resources Control Board, 2022).

No sites were found at the subject property. The closest plotted site is Circle K Store #2706013 located at 3150 Case Rd, Building I, approximately 790 feet east-northeast of the subject property. This site is a UST site with no apparent reports of leakage.

California Department of Toxic Substances Control

The online California DTSC Hazardous Waste Tracking System (HWTS) was searched for hazardous waste manifest records available for the subject property and adjoining or nearby properties along Ethanac and Evans Roads (California DTSC, 2022). No records were found for the subject property or nearby properties.

South Coast Air Quality Management District

Online SCAQMD records (Facility INformation Detail [FIND] database) were searched for the subject property and adjoining or nearby properties along Ethanac and Evans Roads (SCAQMD, 2022). No records were found for the subject property or nearby properties.

ENVIRONMENTAL DATABASE REVIEW

EDR was contacted to provide an environmental database search for the subject property (“target property” in EDR’s database report). The database search provides information regarding landfills, USTs, hazardous waste generators, etc., at the subject property and surrounding properties in accordance with ASTM Standards and AAI. Three sites, not including the subject property, were found in EDR’s search of available government records within the respective search radii. A copy of the EDR database report, which provides a complete list of the federal, state, tribal, and proprietary records searched, is provided in Appendix F.

ENVIROSTOR

The California DTSC Site Mitigation and Brownfields Reuse Program's ENVIROSTOR database identifies sites that have known contamination or sites for which there may be reasons to investigate further. There is one ENVIROSTOR site listed 0.5 mile from the subject property. This site, The Club K-8 School at Evans Road and Nova Lane, is a school investigation site for property with an agricultural use history, including row crops. Preliminary Endangerment Assessment was conducted in April 2003, with a regulatory closure ("No Further Action") status as of April 2003.

UST

The UST database is maintained by the State Water Resources Control Board (SWRCB), and lists all registered USTs. This database lists one site, Emarra, Inc. at 1765 Ethanac Road which is located approximately 0.6 mile east of the subject property. The database erroneously indicates this site is located approximately 26 feet north-northwest of the subject property, as the latitude and longitude coordinates plot this site within the Ethanac Road street. Three USTs permitted under the CRDEH are indicated to be present at this site with no other pertinent information.

CERS HAZ WASTE

The CERS HAZ WASTE (California Environmental Protection Agency (Cal EPA) Regulated Site Hazardous Waste) database is a listing of sites in the Cal EPA Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA Large Quantity Hazardous Waste Generator programs. This database lists one site, Emarra, Inc. at 1765 Ethanac Road which is located approximately 0.6 mile east of the subject property. As previously stated, the database plots this site in error as being approximately 26 feet north-northwest of the subject property. This site is listed as a hazardous waste generator.

CERS TANKS

This database is a list of sites in the California Environmental Protection Agency Regulated Site Portal which fall under the Aboveground Petroleum Storage and UST regulatory programs. One CERS TANKS site, Emarra, Inc. at 1765 Ethanac Road, is listed in this database. This site is located approximately 0.6 mile east of the subject property.

As previously stated, the database plots this site in error as being approximately 26 feet north-northwest of the subject property. This site is indicated to have UST(s) present.

RCRA NonGen/NLR

RCRAInfo is EPA's comprehensive information system that includes selective information on sites which generate, transport, store, treat, and/or dispose of hazardous waste as defined by RCRA. Non-Generators do not presently generate hazardous waste. One site, Waste Management of Moreno Valley (incorrectly spelled as Marino Valley) at 26824 Ethanac Road, is listed in this database over 0.1 mile east-northeast of the subject property with no listed violations.

Orphan Summary

The Orphan Summary within the EDR database report, which is a list of all sites whose location is not readily identified (mapped), and may be at or near the subject property, was reviewed. No sites are listed in the Orphan Summary at or adjoining the subject property. The only site listed is a Home Depot located 0.3 mile northeast of the subject property.

Other Databases

California Geologic Energy Management Division

The California Geologic Energy Management Division (CalGEM) maintains a list of all producing and abandoned oil and gas wells within the State of California. We reviewed the online CalGEM Well Finder, which indicates no abandoned or producing gas and/or oil wells have been located within 1 mile of the subject property (CalGEM, 2022).

VAPOR ENCROACHMENT EVALUATION

As part of this Phase I ESA, a VES was conducted to determine if a VEC exists, based on the information obtained during the Phase I ESA. A VEC is the presence or likely presence of chemicals of concern (COC) vapors in the subsurface of the target property caused by the release of vapors from contaminated soil or groundwater either on or near the target property (i.e., subject property).

Vapor Encroachment Screen

A VES, comprised of Tier 1 screening, was conducted by this firm for the subject property. The VES was conducted in general accordance with the Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, ASTM E2600-15. Although not required to satisfy the requirements of the Phase I ESA under ASTM E1527-13, ASTM E2600-15 was chosen as a methodology to evaluate potential contaminant vapor concerns at or adjoining the subject property.

The subject property historical use has been rural residential and agricultural use (dryland farming). The subject property is located in a historically rural, agricultural area that has increasingly become replaced with commercial and high density residential development. The subject property and surrounding area are anticipated to be underlain by near surface fill/topsoil and older alluvial fan soil materials comprised of interbedded gravels and sands with varying amounts of clays and silts. Based on the local geology and groundwater hydrology, groundwater, historically reported to be more shallow than 30 feet bgs, is considered to be a potential source of impacted soil vapor into the shallow soils of the subject property.

Based on the results of Tier 1 screening, utilizing The EDR Radius Map™ Report with GeoCheck® and research of the history of the subject property and adjoining properties, no sites within 0.33 mile of the subject property were identified as current and/or former potential sources of soil vapor intrusion or encroachment, such as leaking (current or former) USTs, dry cleaners, etc. Based on the results of the VES, Tier 1 screening, a VEC at the subject property can be ruled out.

FINDINGS

Based on our interviews, subject property reconnaissance, and review of historical aerial photographs and topographic maps, the subject property was vacant land dating back to the early 1900s, with dryland and/or irrigated farming dating back to at least 1938, continuing to the present day. Relatively recent farming practices have been reportedly performed without the use of chemicals, including fertilizers, herbicides, and pesticides.

There are three sites, not including the subject property, listed in environmental regulatory databases within 1 mile of the subject property. Based on our research and Vapor Encroachment Screen, no environmentally impaired properties have current or former releases of hazardous substances and/or petroleum products that are known to have

migrated to and/or impacted the subject property, and therefore, a vapor encroachment condition can be ruled out for the subject property.

Data Gaps

Under AAI and ASTM E1527-13 and E1527-21, data gaps that remain after the conduct of all required activities must be identified. The source of information consulted to address the data gaps should be identified, and the significance of the data gaps with respect to our ability to identify conditions indicative of releases or threatened release of hazardous substances on, at, in, or to the property should be addressed.

There are no significant data gaps remaining after our conduct of AAI and ASTM E1527-13 and E1527-21.

OPINIONS

The agricultural farming use of the subject property is not anticipated to have an adverse environmental impact to the planned industrial development of the subject property.

CONCLUSIONS

We have performed a Phase I ESA in conformance with the scope and limitations of ASTM 1527-13 and E1527-21, and AAI, of a proposed industrial development, APN 331-060-018, located at the southeast corner of the intersection of Ethanac and Evans Roads in Menifee, California, the subject property. This assessment has revealed no RECs, CRECs, or significant data gaps in connection with the subject property.

The agricultural farming use of the subject property is an environmental concern which can be addressed by sampling and analysis of the onsite soils.

ADDITIONAL INVESTIGATION

The only way to confirm our opinion regarding the impact to soils at the subject property from agricultural farming use would be to perform soil sampling and subsequent laboratory analysis and data evaluation for arsenic and organochlorine pesticides.

STATEMENT OF QUALIFICATIONS

Mr. John Leuer is the President of LOR Geotechnical Group, Inc., founded in 1988. As a cofounder and President of the company, Mr. Leuer has managed LOR through hundreds of Phase I Environmental Site Assessments, as well as numerous Phase II Environmental Site Assessments and remediation projects, primarily remedial excavation. Mr. Leuer has over 30 years experience in the geotechnical and environmental fields. Mr. Leuer has substantial experience coordinating projects for many city, county and state agencies, as well as in the public sector, gaining a reputation for being responsive to clients needs while providing strong technical expertise. LOR Geotechnical Group, Inc. is one of three firms that previously provided report review for underground storage tank closure for the County of San Bernardino, Fire Department Hazardous Materials Division.

Mr. Leuer holds a B.S. in Civil Engineering from Cal State University at Northridge. He is a registered Geotechnical and Civil Engineer in the State of California. Mr. Leuer is a member of the American Society of Civil Engineers.

Mr. Mathew L. Hunt has over 20 years experience in the environmental field. Mr. Hunt works under LOR Geotechnical Group's environmental operations and has conducted over 350 Phase I Environmental Site Assessments for the private and public sectors. The properties have ranged from agricultural to residential to commercial/industrial. In addition to his experience with environmental assessments for property transfers, he has worked on projects that require mitigation prior to development. Mr. Hunt is well versed in hazardous waste sampling and characterization methodologies in soil and groundwater regimes for groundwater monitoring, site assessment, and site remediation. Projects have ranged from leaking USTs at gasoline stations to commercial and government (including Superfund/CERCLA sites) projects involving metals, perchlorate, and solvents.

Mr. Hunt has a B.S. in soil science from California Polytechnic State University, San Luis Obispo and a M.S. in soil and water science from the University of California, Riverside.

LIMITATIONS

This report was prepared solely for the use and benefit of LOR's client, Compass Danbe Real Estate Partners II, LLC, and their assigns, lenders, and affiliates. They may release this information to third parties, who may use and rely upon this information at their discretion. However, any use of or reliance upon this information by a party other than

Compass Danbe Real Estate Partners II, LLC, and their assigns, lenders, and affiliates, shall be solely at the risk of such third party and without legal recourse against LOR Geotechnical Group, Inc.; its subsidiaries and affiliates; or their respective employees, officers, or directors; regardless of whether the action in which recovery of damages is sought is based upon contract, statute, or otherwise.

The content and conclusions provided by LOR in this assessment are based on information collected during our investigation, which may include, but is not limited to, visual site inspections, interviews with the site owner, regulatory agencies and other pertinent individuals, a review of available public documents, and our professional judgement based on said information at the time of preparation of this document. Any subsurface samples results and observations presented herein are considered to be representative of the area of investigation; however, soil conditions may vary between sample locations and may not necessarily apply to the general site as a whole. If future subsurface or other conditions are revealed which may vary from these findings, the newly-revealed conditions must be evaluated and may invalidate the conclusions of this report.

This report has been prepared in accordance with generally accepted practices using standards of care and diligence normally practiced by recognized consulting firms performing services of a similar nature. LOR Geotechnical Group, Inc. (LOR) is not responsible for the accuracy of information provided by other individuals or entities which is used in this report. This report presents our professional judgement based upon data and findings identified in this report, and the interpretation of such data based upon our experience and background, and no warranty, either expressed or implied, is made. The conclusions presented are based upon the current regulatory climate and may require revision if future regulatory changes occur.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Governmental Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a significant amount of time without a review by LOR Geotechnical Group, Inc., verifying the suitability of the conclusions and recommendations.

Report Viability

Based on ASTM E1527-13 and E1527-21 and AAI, certain components of this report are no longer valid after 180 days of their being performed, including: 1) interviews with past and/or present subject property owners, operators, and/or occupants; 2) visual inspection of the subject property and adjoining properties; 3) review of federal, tribal, state, and local government records; and 4) declaration by the Environmental Professional. Once this 180-day period has expired for any of the above components, this report should be updated or revised to meet the requirements for continued viability under the ASTM and AAI standards. Further, it is the User's responsibility to complete a search for recorded environmental cleanup liens, which is a fifth component that is no longer valid after 180 days. If requested, LOR can also perform the search for recorded environmental cleanup liens.

The above components, excluding the search for recorded environmental cleanup liens, have been performed by Mr. Mathew L. Hunt, an Environmental Professional with LOR, on the following dates:

- Interviews - January 3, 2022
- Visual inspection of subject property and adjoining properties - January 13, 2022
- Review of government records - January 5, 2022
- Declaration of Environmental Professional - March 17, 2022

CLOSURE AND ENVIRONMENTAL PROFESSIONAL STATEMENTS

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional as defined in § 312.10 of 40 CFR part 312.

We have the specific qualifications based on education, training, and experience to assess a property of the nature, history, and setting of the subject property. We have developed and performed the all appropriate inquires in conformance with the standards and practices set forth in 40 CFR part 312.

We appreciate this opportunity to be of service and trust this report provides the information desired at this time. Should questions arise, please do not hesitate to contact this office.

Respectfully submitted,
LOR Geotechnical Group, Inc.

Mathew L. Hunt
Environmental Scientist



John P. Leuer, CE 34996
President

MLH:JPL:ss

Distribution: Addressee (1), and PDF via email: Vicky@CDREpartners.com

REFERENCES

American Society for Testing and Materials, 2013, E1527-13: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, November 1, 2013.

American Society for Testing and Materials, 2015, E2600-15: Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions, October 1, 2015.

American Society for Testing and Materials, 2021, E1527-21: Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process, November 1, 2021.

California Department of Toxic Substances Control (DTSC), 2022, Online Hazardous Waste Tracking System (HWTS), https://hwts.dtsc.ca.gov/search, accessed March 15, 2022.

California Department of Water Resources (CDWR), 2022, Online Water Data Library, https://wdl.water.ca.gov/waterdatalibrary/, accessed March 15, 2022.

California Geologic Energy Management Division, 2022, Online Well Finder, https://maps.conservation.ca.gov/doggr/wellfinder/#openModal/-117.19804/33.73727/13, accessed March 15, 2022.

California State Water Resources Control Board, 2022, Online GeoTracker Database, http://geotracker.waterboards.ca.gov/, accessed March 15, 2022.

County of Riverside, 2021, Geographic Information System, “Map My County” Riverside County Parcel Report, https://gis1.countyofriverside.us/Html5Viewer/?viewer=MMC_Public, accessed December 23, 2021.

County of Riverside Assessor, 2022, Online Services Property Search, https://ca-riverside-acr.publicaccessnow.com/Search.aspx, accessed January 5, 2022.

County of Riverside Transportation and Land Management Agency, 2021, Online Services, http://onlineservices.rctlma.org/content/permits_by_parcel_numberPLUS.aspx, accessed December 23, 2021.

Google, Inc., 2021, Google Earth Pro Computer Software Program, Version 7.3.4.8248 (64-bit), July 16, 2021.

Morton, D.M., K.R. Bovard, and G. Morton, 2003, Preliminary Geologic Map of the Romoland 7.5' Quadrangle, Riverside County, California, United States Geological Survey, Open-File Report OF-2003-102, Map Scale 1:24,000.

National Environmental Title Research (NETR), LLC, 2022, Online HistoricAerials: https://www.historicaerials.com/, accessed February and March 2022.

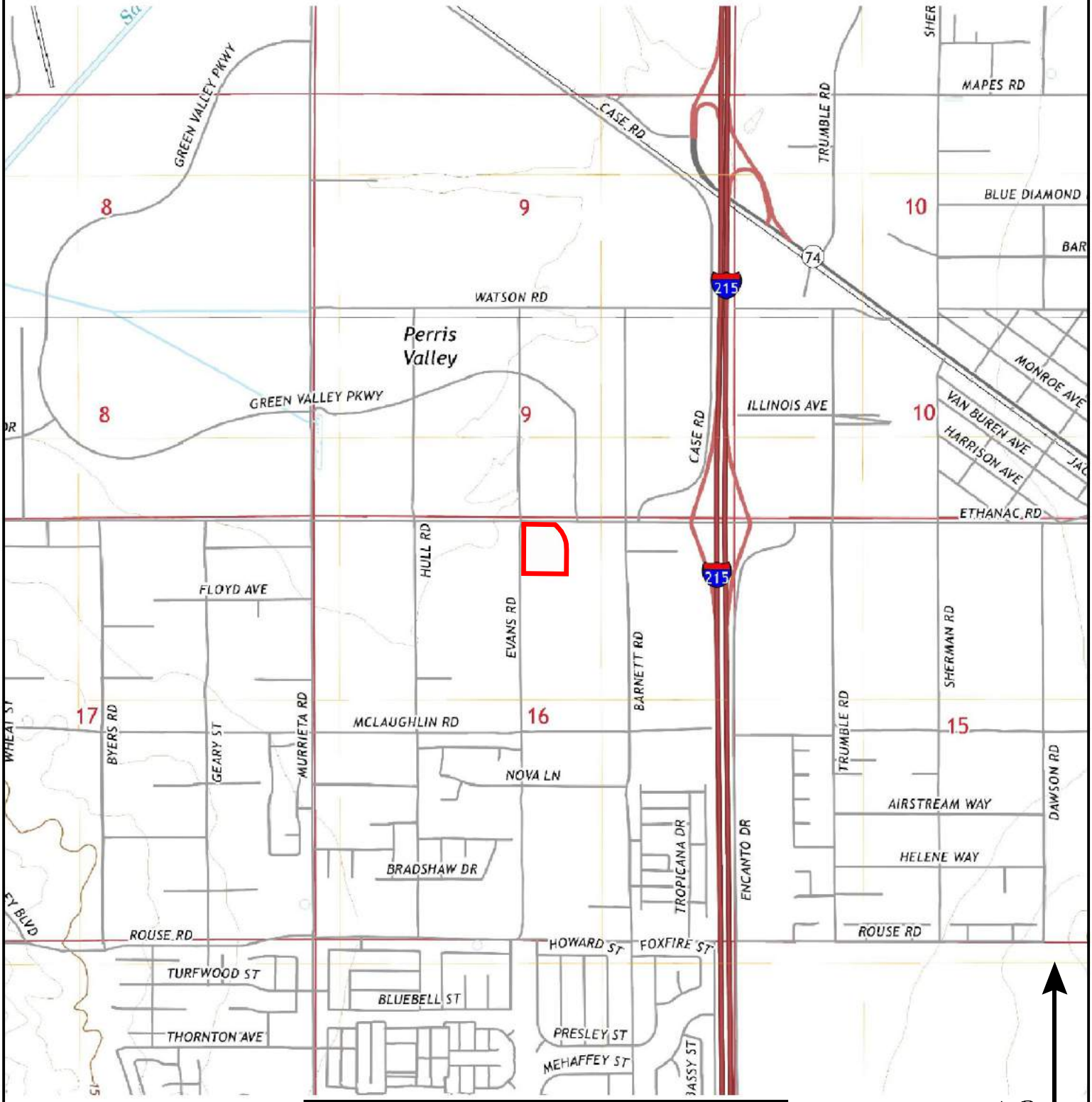
South Coast Air Quality Management District, 2022, Online Facility Information Detail (FIND) database, https://xappprod.aqmd.gov/find, accessed March 15, 2022.

United States Environmental Protection Agency, 2005, 40 CFR Part 312: Standards and Practices for All Appropriate Inquiries; Final Rule, November 1, 2005 (Amended 2013).

United States Geological Survey (USGS), 2022a, Online USGS Earthquake Hazards: Quaternary Fault and Fold Database of the United States (downloadable KML files for Google Earth), https://www.usgs.gov/programs/earthquake-hazards/faults, accessed February 6, 2022.

United States Geological Survey (USGS), 2022b, Online USGS Historical Topographic Map Explorer, https://livingatlas.arcgis.com/topoexplorer/index.html, accessed March 15, 2022.

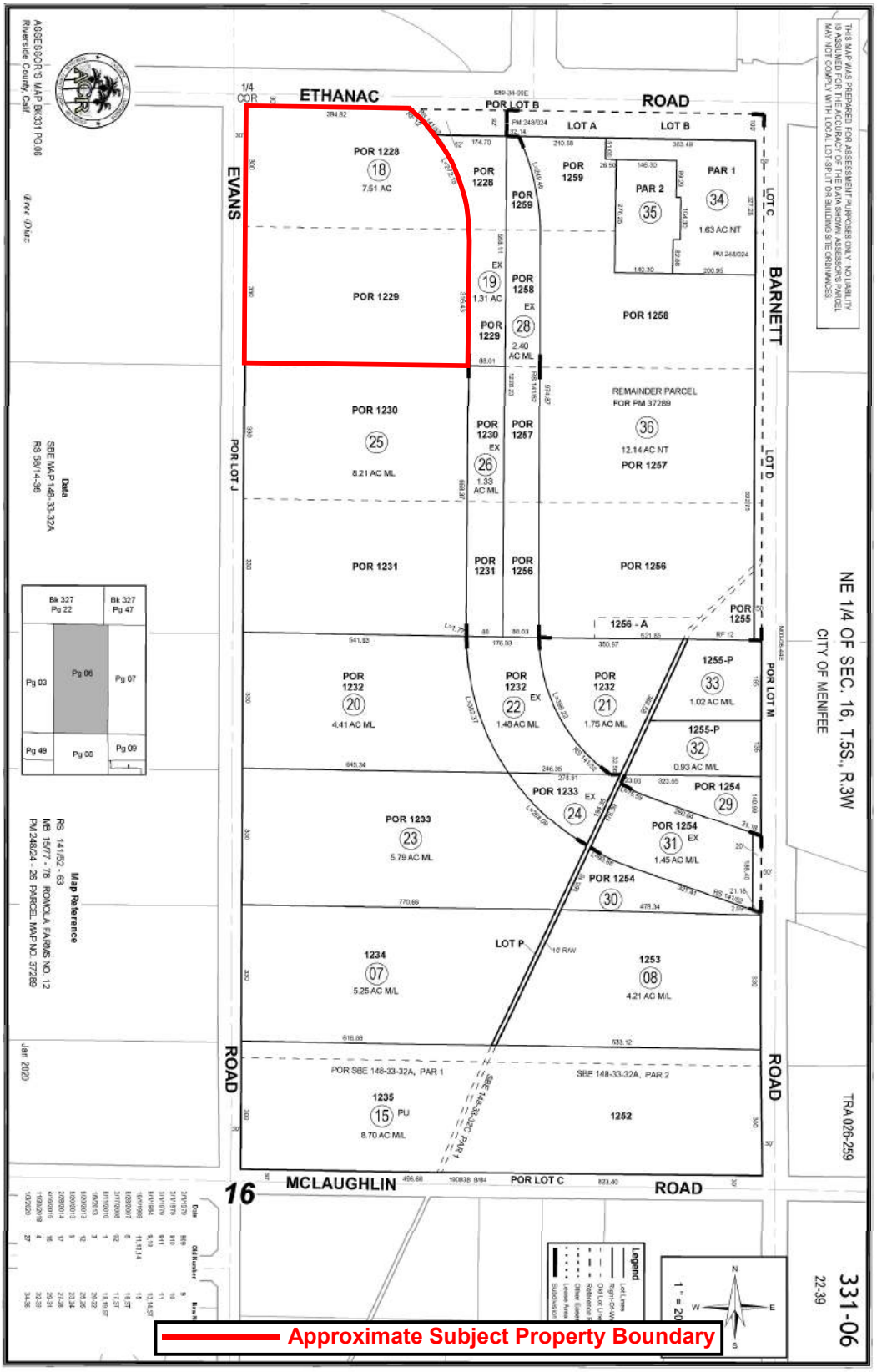
FIGURES



Basemap Source: Environmental Data Resources, Inc. Online Lightbox™

INDEX MAP

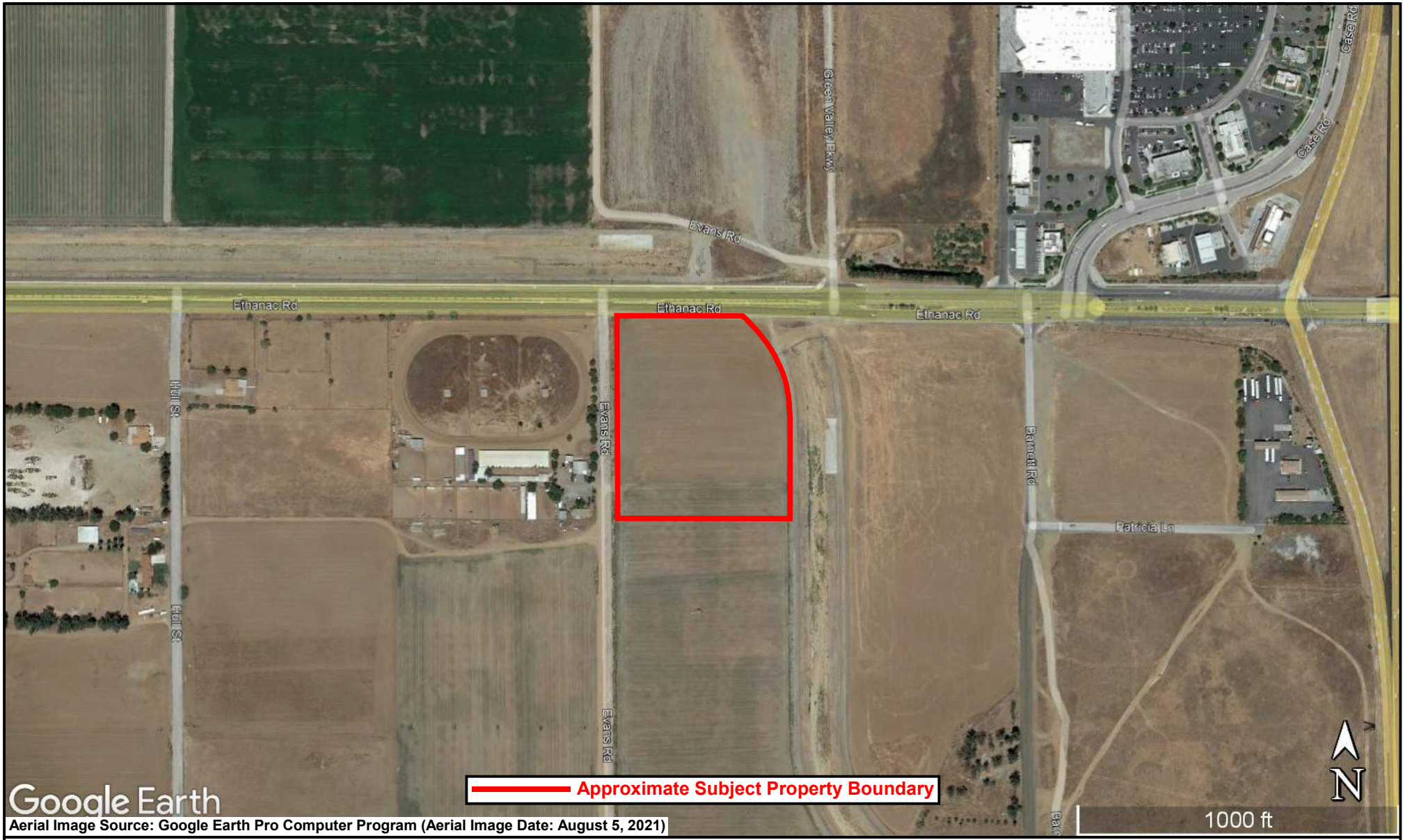
PROJECT: Proposed Industrial Develop., SEC Ethanac and Evans Roads, Menifee, CA	**PROJECT NO.:** 23798.2
CLIENT: Compass Danbe Real Estate Partners II, LLC	**FIGURE:** 1
LOR GEOTECHNICAL GROUP, INC.	**DATE:** March 2022
	SCALE: 1" ~ 1,720'



Basemap Source: County of Riverside Assessor

ASSESSOR'S PARCEL MAP

PROJECT:	Proposed Industrial Develop., SEC Ethanac and Evans Roads, Menifee, CA	**PROJECT NO.:**	23798.2
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**FIGURE:**	2
		DATE:	March 2022
LOR GEOTECHNICAL GROUP, INC.		**SCALE:**	1" ~ 390'



Aerial Image Source: Google Earth Pro Computer Program (Aerial Image Date: August 5, 2021)

RECENT COLOR AERIAL IMAGE

PROJECT:	Proposed Industrial Development, SEC Ethanac and Evans Roads, Menifee, CA	**PROJECT NO.:**	23798.2
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**FIGURE:**	3
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	March 2022
		SCALE:	1" ~ 420'

APPENDIX A

Completed ASTM E1527-13 User Questionnaire

APN 331-060-018
Menifee, California

LOR Project No. 23798.2

E1527–21

USER QUESTIONNAIRE

INTRODUCTION

To qualify for one of the Landowner Liability Protections (LLPs) offered by the Small Business Liability Relief and Brownfields Revitalization Act of 2001 (the "*Brownfields Amendments*"), the User must conduct the following inquiries required by 40 Code of Federal Regulations (CFR) §§ 312.25, 312.28, 312.29, 312.30, and 312.31. These inquiries must also be conducted by Environmental Protection Agency (EPA) Brownfield Assessment and Characterization grantees. The User should provide the following information to the *environmental professional*. Failure to conduct these inquiries could result in a determination that "*all appropriate inquiries*" is not complete.

(1.) Environmental liens that are filed or recorded against the *subject property* (40 CFR § 312.25).

Did a search of land title records (or judicial records where appropriate) identify any environmental liens filed or recorded against the *subject property* under federal, tribal, state or local law?

None as far as current owners know.

(2.) Activity and use limitations that are in place on the *subject property* or that have been filed or recorded against the *subject property*.

Did a search of land title records (or judicial records where appropriate) identify any activity and land use limitations (AULs), such as *engineering controls*, land use restrictions, or *institutional controls* that are in place at the *subject property* and/or have been filed or recorded against the *subject property* under federal, tribal, state, or local law?

None as far as current owners know.

(3.) Specialized knowledge or experience of the person seeking to qualify for the LLP (40 CFR § 312.28).

Do you have any specialized knowledge or experience related to the *subject property* or nearby properties? For example, are you involved in the same line of business as the current or former *occupants* of the *subject property* or an adjoining property so that you would have specialized knowledge of the chemicals and processes used by this type of business?

None, as far as current owners Know.

(4.) Relationship of the purchase price to the fair market value of the *subject property* if it were not contaminated (40 CFR § 312.29).

Does the purchase price being paid for this *subject property* reasonably reflect the fair market value of the *property*? If you conclude that there is a difference, have you considered whether the lower purchase price is because contamination is known or believed to be present at the *subject property*?

N/A

(5.) Commonly known or *reasonably ascertainable* information about the *subject property* (40 CFR § 312.30).

Are you aware of commonly known or reasonably ascertainable information about the *subject property* that would help the *environmental professional* to identify conditions indicative of releases or threatened releases? For example, (a.) Do you know the past uses of the *subject property*? (b.) Do you know of specific chemicals that are present or once were present at the *subject property*? (c.) Do you know of spills or other chemical releases that have taken place at the *subject property*? (d.) Do you know of any environmental cleanups that have taken place at the *subject property*?

(a)Empty land during current ownership. Since 2014, the property was leased the tenant farmer, Mr.Donald Bean,P.O.Box 263,Nuevo, CA ,92567-263, Tel: 951-928-0844 CP:951-205-6726 Fax:951-928-9854)

(b)&(C) WE are not aware of any chemicals nor any spillage on the property...

(d)There has been no environmental claean-ups during the current ownership, as far as we know.

6.) The degree of obviousness of the presence of likely presence of contamination at the *subject property*, and the ability to detect the contamination by appropriate investigation (40 CFR § 312.31).

Based on your knowledge and experience related to the *subject property*, are there any obvious indicators that point to the presence or likely presence of releases at the *subject property*?

No history of contamination. No release as far as we, owners know.

In addition to the above information, certain information should be collected, if available, and provided to the *environmental professional* conducting the Phase I Environmental Site Assessment (ESA). This information is intended to assist the *environmental professional*, but is not necessarily required to qualify for one of the LLPs. The information includes:

(a) The reason why the Phase I ESA is being performed:

ESA has never been performed during the current ownership, since 1988.

(b) The type of *property* and type of *property* transaction, for example, sale, purchase, exchange, etc.:

(1) Easement for public road & drainage(2006)---in the county public record

(2) Grant Deed to Riverside County Flood Control & Water Conservation District(2005) --- in the county public record

(c) The complete and correct address for the *subject property* (a map or other documentation showing *subject property* location and boundaries is helpful):

Parcel No: 331-060-018
Lots 1228 & 1229 of Romola Farm No.12(Ethank Rd & Evans Rd)

(d) The scope of services desired for the Phase I ESA (including whether any parties to the *property* transaction may have a required standard scope of services or whether any considerations beyond the requirements of Practice E1527 are to be considered):

Not applicable

(e) Identification of all parties who will rely on the Phase I ESA report:

Not applicable

(f) Identification of the *subject property* site contact and how the contact can be reached:

Scott Forest(WestMar Commercial Real Estate Ph: 951-491-6300X 307 or CP:760-310-4965)

Joong H . Choh(One of 2 owners in Illinois). CP:847-636-9799

(g) Any special terms and conditions which must be agreed upon by the *environmental professional*:

Please notify above individuals prior to start the Environemental Site Assessment, as necessary.

(h) Any other knowledge or experience with the *subject property* that may be pertinent to the *environmental professional* (for example, copies of any available prior environmental site assessment reports, documents, correspondence, etc., concerning the *subject property* and its environmental condition):

See section (5).

There has been no history of environmental site assessment during current ownership.

APN 331-060-018
Menifee, California

LOR Project No. 23798.2

ADDITIONAL SPACE FOR ANSWERS (if needed):

Concerning questions of section No.5 in this questionnaire, further information related with farming, fertilizer,or any chemicals for farming etc could be obtained from the tennant farmer Donald Bean through the contact information provided above.

The *User* Questionnaire was completed by:

Name:	Joong H. Choh
Title:	
Firm:	
Address:	4N 680 Ware Woods Dr. St. Charles.,IL 60175
Phone:	847-636-9799 -- alternative; JH Han(847-989-6626)
Date:	Jan.5,2022
User's relationship to the *property*:	One of 2 Co-owners

Copies of the completed questionnaire will be filed at:

LOR Geotechnical Group, Inc.; 6121 Quail Valley Court; Riverside, California 92507

Copies of the completed questionnaire may be emailed, mailed, or delivered to:

LOR Geotechnical Group, Inc.; 6121 Quail Valley Court; Riverside, California 92507

User represents that to the best of their knowledge, the above statements and facts are true and correct, and to the best of their actual knowledge, no material facts have been suppressed or misstated.

Signature: Joong H Choh Date: Jan.5,2022

APPENDIX B

EDR Historical Fire Insurance Map Report

APN 331-060-018

Ethanac Road/Evans Road

Menifee, CA 92585

Inquiry Number: 6809919.3

January 05, 2022

Certified Sanborn® Map Report

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

Certified Sanborn® Map Report

01/05/22

Site Name:

APN 331-060-018
Ethanac Road/Evans Road
Menifee, CA 92585
EDR Inquiry # 6809919.3

Client Name:

LOR Geotechnical Group, Inc.
6121 Quail Valley Court
Riverside, CA 92507
Contact: Mathew Hunt

The Sanborn Library has been searched by EDR and maps covering the target property location as provided by LOR Geotechnical Group, Inc. 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 # 743D-4337-811A

PO # 23798.2

Project APN 331-060-018

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 #: 743D-4337-811A

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

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APPENDIX C

EDR Historical Aerial Photographs

APN 331-060-018

Ethanac Road/Evans Road

Menifee, CA 92585

Inquiry Number: 6809919.5

January 11, 2022

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

01/11/22

Site Name:

APN 331-060-018
Ethanac Road/Evans Road
Menifee, CA 92585
EDR Inquiry # 6809919.5

Client Name:

LOR Geotechnical Group, Inc.
6121 Quail Valley Court
Riverside, CA 92507
Contact: Mathew Hunt

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
2016	1"=500'	Flight Year: 2016	USDA/NAIP
2012	1"=500'	Flight Year: 2012	USDA/NAIP
2009	1"=500'	Flight Year: 2009	USDA/NAIP
2006	1"=500'	Flight Year: 2006	USDA/NAIP
2002	1"=500'	Acquisition Date: January 01, 2002	USGS/DOQQ
1997	1"=500'	Acquisition Date: January 01, 1997	USGS/DOQQ
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: June 14, 1961	USDA
1953	1"=500'	Flight Date: August 28, 1953	USDA
1949	1"=500'	Flight Date: May 08, 1949	USDA
1938	1"=500'	Flight Date: June 14, 1938	USDA

When delivered electronically by EDR, the aerial photo images included with this report are for ONE TIME USE ONLY. Further reproduction of these aerial photo images is prohibited without permission from EDR. For more information contact your EDR Account Executive.

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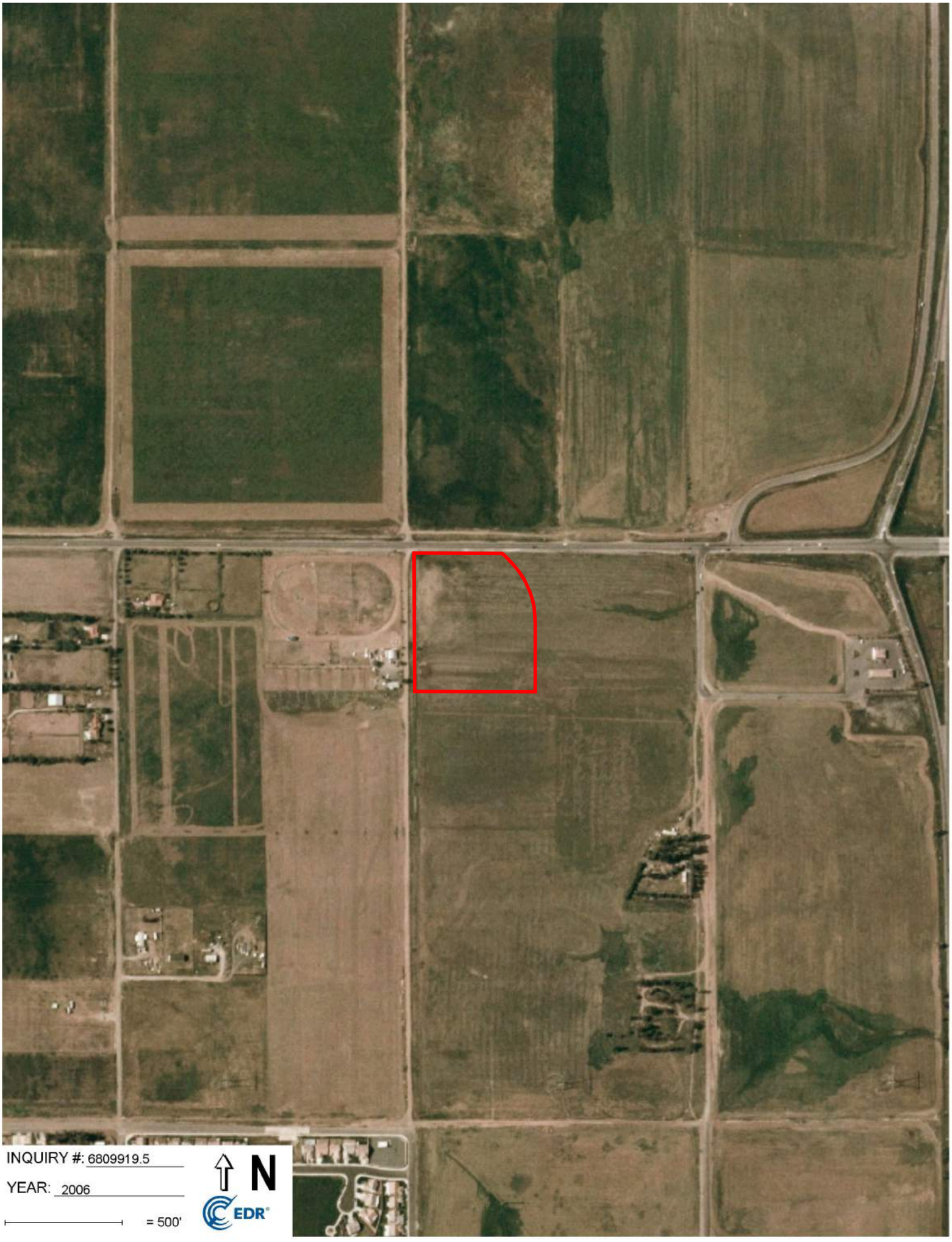
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INQUIRY #: 6809919.5
YEAR: 2016
= 500'
N
EDR

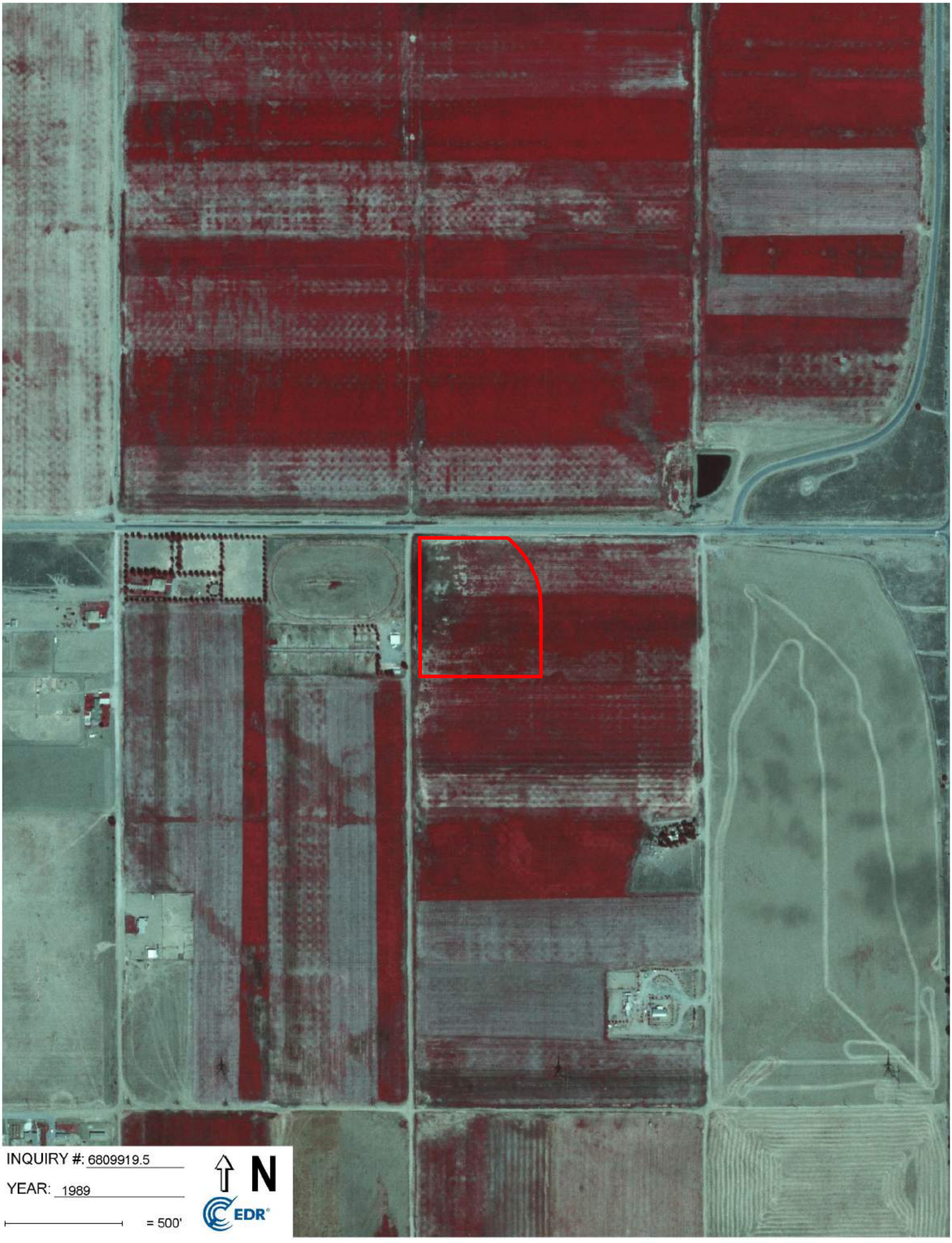

INQUIRY #: 6809919.5
YEAR: 2012
= 500'
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EDR


INQUIRY #: 6809919.5
YEAR: 2009
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N
EDR


INQUIRY #: 6809919.5
YEAR: 2006
= 500'
N
EDR


INQUIRY #: 6809919.5
YEAR: 2002
= 500'
N
EDR


INQUIRY #: 6809919.5
YEAR: 1997
= 500'
N
EDR



INQUIRY #: 6809919.5

YEAR: 1989

= 500'

N

EDR


INQUIRY #: 6809919.5
YEAR: 1985
= 500'
N
EDR



INQUIRY #: 6809919.5

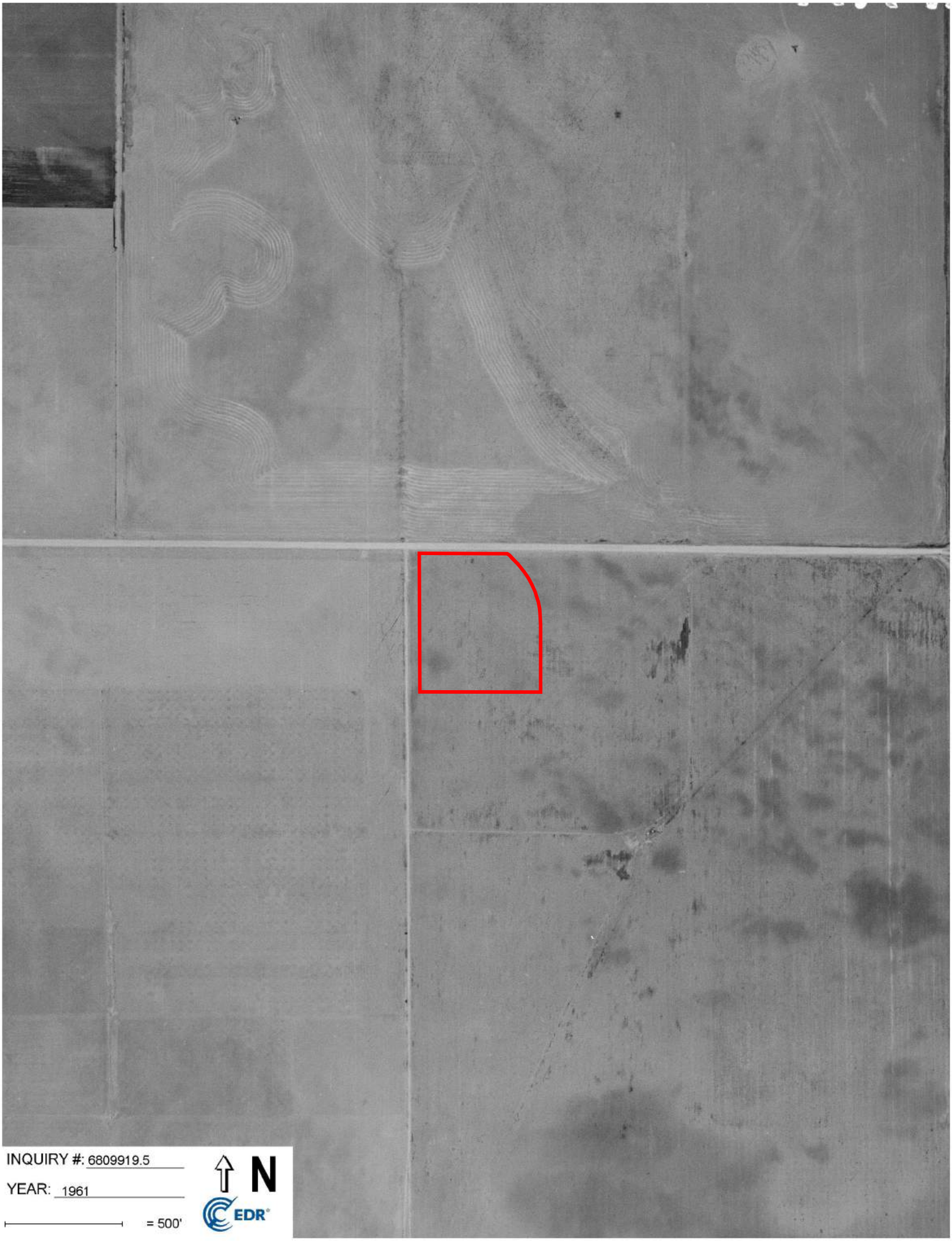
YEAR: 1978

= 500'

N

EDR


INQUIRY #: 6809919.5
YEAR: 1967
= 500'
N
EDR



INQUIRY #: 6809919.5

YEAR: 1961

= 500'

N

EDR



INQUIRY #: 6809919.5

YEAR: 1953

= 500'

N

EDR



INQUIRY #: 6809919.5

YEAR: 1949

= 500'

N

EDR



INQUIRY #: 6809919.5

YEAR: 1938

= 500'

N

EDR

APPENDIX D

Color Site Photographs



PHOTO 1 - Northeasterly view towards a utility pole located offsite and near the southwest corner of the subject property. No evidence of leakage was observed at the pole-mounted, electrical transformer.



PHOTO 2 - The "RECYCLED WATER" sign to the right is located near the base of the utility pole shown in the previous photograph. This sign appears to be associated with the 1-foot diameter, white plastic irrigation pipe shown in the upper left of the photograph. This pipe along with the nearby utility pole are estimated to be located near and offsite to the west of the subject property.



PHOTO 3 - View facing north from at/near the estimated southwest corner of the subject property. The white evident at the bottom of the lower left portion of the photograph is another exposed portion of the 1-foot, plastic irrigation pipe that appears to utilize recycled water. The dirt road to the left runs along the right-of-way for Evans Road. Between this dirt road and the subject property includes an area with a drainage or low-lying area, the 1-foot irrigation pipe, and utility poles and lines.



PHOTO 4 - View to the right of that shown in the previous photograph, facing northeast, looking across and beyond the subject property. The dark green vegetation in the lower middle and right portions of the photograph is part of an alfalfa crop located in the south end of the subject property, extending offsite to the south.



PHOTO 5 - View to the right of that shown in the previous photograph, facing east along the south boundary of the subject property.



PHOTO 6 - View to the right of that shown in the previous photograph, facing offsite to the southeast. The taller, mature trees in the background, left of center, mark the location of a former residence over 850 feet southeast of the subject property.



PHOTO 7 - View to the right of that shown in the previous photograph, facing offsite to the south, with the dirt road along Evans Road to the right (west). The crop on both sides of Evans Road is alfalfa.



PHOTO 8 - View to the right of that shown in the previous photograph, facing southwest. At/near the right photograph edge is a dirt road heading west from Evans Road.



PHOTO 9 - View to the right of that shown in the previous photograph, facing west, looking offsite across Evans Road towards a mobile home in the southeast corner of a horse ranch ("Rancho Fortunado"). To the left (south) of the horse ranch is a tractor and other equipment associated with farming, including sprinkler pipe.



PHOTO 10 - View to the right of that shown in the previous photograph, facing offsite across Evans Road towards the horse ranch. The offsite structure to the right appears to be a barn or stables.



PHOTO 11 - View facing north, looking across and beyond the subject property, standing near the middle of the south subject property boundary. Sporadic distressed alfalfa plants are evident, though no distressed vegetation was observed in large, concentrated areas.



PHOTO 12 - View facing west from the estimated southeast corner of the subject property, looking across and beyond the subject property. In the background to the right is the offsite horse ranch.



PHOTO 13 - View to the right of that shown in the previous photograph, facing northwest across and beyond the subject property. As shown across most of the near background, much of the subject property is bare soil at ground surface.



PHOTO 14 - View to the right of that shown in the previous photograph, facing north from the estimated southeast corner of the subject property. To the right (east) of the metal chain-link fence is a gravel/dirt access road, followed by an artificial, earthen storm water drainage channel, along the opposite (east) side of which is another gravel/dirt access road. The concrete feature to the right along the east side of this channel is an entrance ramp to the channel bottom for vehicles and/or equipment.



PHOTO 15 - View to the right of that shown in the previous photograph, looking offsite to the northeast. Within the background to the left is a retail center ("Perris Crossing") located over 700 feet from the subject property. This retail center includes a Circle K gasoline station with a 7-Eleven gasoline station across the street along Case Road.



PHOTO 16 - View to the right of that shown in the previous photograph, facing offsite to the east. Within the central photograph background is a Union 76 gasoline station situated on the west side of the I-215 Highway right-of-way, located over 0.25 mile from the subject property.



PHOTO 17 - View facing north from the southeast corner of the portion of the subject property that is mostly bare soil. In the background to the right is a concrete head wall for the offsite storm water drainage channel, before it goes underground and beneath Ethanac Road, emerging on the other (north) side.



PHOTO 18 - View to the left of that shown in the previous photograph, facing northwest across and beyond the mostly bare portion of the subject property.



PHOTO 19 - View to the left of that shown in the previous photograph, facing west, looking along the transition from the mostly bare soil portion of the subject property (right) to the south end (left) with the north end of an alfalfa crop that extends offsite to the south. The northernmost vegetation shown here to the right of photograph center appears to be mostly weeds (common mallow).



PHOTO 20 - The feature shown is located along the curving northeast boundary of the subject property approximately 62 feet south of the paved road for Ethanac Road, and may be a vent associated with some type of underground water utility. This vent appears to be located immediately offsite.



PHOTO 21 - Southeasterly view from the estimated northeast corner of the subject property, looking along the curving northeast subject property boundary. The apparent utility vent feature shown in the previous photograph is located immediately left of photograph center among the group of tumbleweeds.



PHOTO 22 - View to the right of that shown in the previous photograph, facing southwest across and beyond the subject property. A path of recently disced soil is evident within the mostly bare soil portion of the subject property.



PHOTO 23 - View to the right of that shown in the previous photograph, facing west along the north subject property boundary. To the right is Ethanac Road, an asphalt concrete-paved, 4-lane roadway.



PHOTO 24 - Northwesterly view to the right of that shown in the previous photograph, looking offsite and across Ethanac Road. Across Ethanac Road at photograph center, the earthen storm water drainage channel daylights or emerges from underground.



PHOTO 25 - View to the right of that shown in the previous photograph, facing north across Ethanac Road, looking towards vacant land on the other side.



PHOTO 26 - View to the right of that shown in the previous photograph, facing northeast, looking across Ethanac Road towards a storm water drainage channel or basin on the other side which is difficult to discern. Across much of the middle of the background, from the central portion of the photograph and extending to the right edge, is the Perris Crossing retail center.



PHOTO 27 - View facing east from near the estimated northwest corner of the subject property.



PHOTO 28 - View to the right of that shown in the previous photograph, facing southeast across and beyond the subject property.



PHOTO 29 - View to the right of that shown in the previous photograph, facing south along the west subject property boundary.



PHOTO 30 - View to the right of that shown in the previous photograph, facing offsite to the west and across Evans Road. The north side of the offsite horse ranch across Evans Road to the west is shown to the left.



PHOTO 31 - View to the right of that shown in the previous photograph, looking to the north across Ethanac Road. The concrete visible running left to right across the lower portion of the photograph and beyond Ethanac Road is a ramp entrance structure similar to that shown to the left in **PHOTO 15**.



PHOTO 32 - The yellow 5-gallon bucket and nearby gray 5-quart motor oil container are within the Evans Road right-of-way offsite. The bucket is empty. The gray container appears to be contain approximately 1 gallon of waste oil. No signs of waste oil leakage was observed.



PHOTO 33 - Shown along the east side of Evans Road (dirt road) are two small drainage channels that feed into a low area. The water shown in these drainage channels may be wash water from the horse ranch across Evans Road. Horses were observed being washed or rinsed off while water bubbled up into these small drainage channels. It does not appear that this water is reaching the subject property.



PHOTO 34 - View facing west in line with the small drainage channel shown in the upper portion of the previous photograph. An active wash rack for horses is evident across Evans Road to the left and along the east side of the offsite horse ranch.



PHOTO 35 - This offsite, lower-lying area shown along the east side of Evans Road has water running along it, fed by the small drainage channels shown in the two previous photographs. This area likely also accumulates storm water during significant precipitation events.



PHOTO 36 - View facing north from near the southwest corner of the portion of the subject property that is mostly bare soil. The west subject property boundary is estimated to be roughly in line with the overhead power line to the right (east).



PHOTO 37 - View to the right of that shown in the previous photograph, facing northeast, looking across the subject property and beyond.



PHOTO 38 - View to the right of that shown in the previous photograph, facing east, looking along the transition from the mostly bare soil portion of the subject property (left) to the south end (right) with the north end of an alfalfa crop that extends offsite to the south. The northernmost vegetation shown here near photograph center appears to be mostly weeds (common mallow).

APPENDIX E

CRDEH Records Response Letter
Dated January 12, 2022

County of Riverside

DEPARTMENT OF ENVIRONMENTAL HEALTH

KEITH JONES, DIRECTOR

RELEASE OF RECORDS RESPONSE

January 12, 2022

Service Request No: 53447

LOR Geotechnical
6121 Quail Valley Ct.
Riverside, CA 92507
Attn; Mathew L. Hunt

Your request concerning **Hazardous Materials Management Records** has been received and a file search has been conducted. The appropriate action has been taken.

Site Address	City	Records Found
26300 – 26700 Ethanac Rd.	**Menifee**	☐ **YES** ☒ **NO**
THIS IS NOT AN INVOICE	**Estimated Cost**	**$0.00**

If no records are found, no further action will be taken.

If records are found, please contact our office at (951) 358-5055 to schedule a file review appointment. Records will be available for 30 days from the date of this letter, after which a new Records Request will need to be submitted.

** There is a clerical records research fee of **$.50 for the first page, plus $.10 per additional page **Records will not be made available until this fee is paid****

Other fees may apply

Note: Additional time for processing may be required

Appointments are scheduled in one (1) hour increments, not to exceed two (2) hours.

Environmental Protection & Oversight Division
Hazardous Materials Management Branch
Attn: Records Management
P.O. Box 7909
Riverside, CA 92513-7909
Ph: (951) 358-5055
Fax (951) 358-5342

*additional fees may include costs for appt. cancellation/no show, time per service, scan/fax/mail of documents, cd/dvd

APPENDIX F

EDR Environmental Database Report

APN 331-060-018
Ethanac Road/Evans Road
Menifee, CA 92585

Inquiry Number: 6809919.2s
January 05, 2022

The EDR Radius Map™ Report with GeoCheck®

6 Armstrong Road, 4th floor
Shelton, CT 06484
Toll Free: 800.352.0050
www.edrnet.com

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Detail Map	3
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Orphan Summary	22
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GEOCHECK ADDENDUM

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Physical Setting Source Summary	A-2
Physical Setting SSURGO Soil Map	A-5
Physical Setting Source Map	A-12
Physical Setting Source Map Findings	A-14
Physical Setting Source Records Searched	PSGR-1

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 (E1527-21), 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

ETHANAC ROAD/EVANS ROAD
MENIFEE, CA 92585

COORDINATES

Latitude (North):	33.7420370 - 33ˆ 44' 31.33''
Longitude (West):	117.1966990 - 117ˆ 11' 48.11''
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	481780.1
UTM Y (Meters):	3733378.0
Elevation:	1422 ft. above sea level

USGS TOPOGRAPHIC MAP ASSOCIATED WITH TARGET PROPERTY

Target Property Map:	12015913 ROMOLAND, CA
Version Date:	2018
North Map:	12015907 PERRIS, CA
Version Date:	2018

AERIAL PHOTOGRAPHY IN THIS REPORT

Portions of Photo from:	20140603, 20140530
Source:	USDA

MAPPED SITES SUMMARY

Target Property Address:
ETHANAC ROAD/EVANS ROAD
MENIFEE, CA 92585

Click on Map ID to see full detail.

MAP ID	SITE NAME	ADDRESS	DATABASE ACRONYMS	RELATIVE ELEVATION	DIST (ft. & mi.) DIRECTION
A1	EMARRA, INC.	1765 ETHANAC RD	UST	Higher	29, 0.005, NNW
A2	EMARRA, INC	1765 ETHANAC RD	CERS HAZ WASTE, CERS TANKS, CERS	Higher	29, 0.005, NNW
3	WASTE MANAGEMENT OF	26824 ETHANAC RD	RCRA NonGen / NLR	Higher	817, 0.155, ENE
4	THE CLUB K-8 SCHOOL	EVANS ROAD/NOVA LANE	ENVIROSTOR, SCH, CERS	Higher	2642, 0.500, South

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

Lists of Federal NPL (Superfund) sites

NPL ---- National Priority List
Proposed NPL ---- Proposed National Priority List Sites
NPL LIENS ---- Federal Superfund Liens

Lists of Federal Delisted NPL sites

Delisted NPL ---- National Priority List Deletions

Lists of Federal sites subject to CERCLA removals and CERCLA orders

FEDERAL FACILITY ---- Federal Facility Site Information listing
SEMS ---- Superfund Enterprise Management System

Lists of Federal CERCLA sites with NFRAP

SEMS-ARCHIVE ---- Superfund Enterprise Management System Archive

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS ---- Corrective Action Report

Lists of Federal RCRA TSD facilities

RCRA-TSDF ---- RCRA - Treatment, Storage and Disposal

Lists of Federal RCRA generators

RCRA-LQG ---- RCRA - Large Quantity Generators
RCRA-SQG ---- RCRA - Small Quantity Generators
RCRA-VSQG ---- RCRA - Very Small Quantity Generators (Formerly Conditionally Exempt Small Quantity Generators)

Federal institutional controls / engineering controls registries

LUCIS ---- Land Use Control Information System

US ENG CONTROLS ..... Engineering Controls Sites List
US INST CONTROLS ..... Institutional Controls Sites List

Federal ERNS list

ERNS ..... Emergency Response Notification System

Lists of state- and tribal (Superfund) equivalent sites

RESPONSE ..... State Response Sites

Lists of state and tribal landfills and solid waste disposal facilities

SWF/LF ..... Solid Waste Information System

Lists of state and tribal leaking storage tanks

LUST ..... Geotracker's Leaking Underground Fuel Tank Report
INDIAN LUST ..... Leaking Underground Storage Tanks on Indian Land
CPS-SLIC ..... Statewide SLIC Cases

Lists of state and tribal registered storage tanks

FEMA UST ..... Underground Storage Tank Listing
AST ..... Aboveground Petroleum Storage Tank Facilities
INDIAN UST ..... Underground Storage Tanks on Indian Land

Lists of state and tribal voluntary cleanup sites

INDIAN VCP ..... Voluntary Cleanup Priority Listing
VCP ..... Voluntary Cleanup Program Properties

Lists of state and tribal brownfield 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
SWRCY ..... Recycler Database
HAULERS ..... Registered Waste Tire Haulers Listing
INDIAN ODI ..... Report on the Status of Open Dumps on Indian Lands
ODI ..... Open Dump Inventory
DEBRIS REGION 9 ..... Torres Martinez Reservation Illegal Dump Site Locations
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
PFAS ---- PFAS Contamination Site Location Listing
AQUEOUS FOAM ---- Former Fire Training Facility Assessments Listing

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

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
US MINES	Mines Master Index File
ABANDONED MINES	Abandoned Mines
FINDS	Facility Index System/Facility Registry System
ECHO	Enforcement & Compliance History Information
DOCKET HWC	Hazardous Waste Compliance Docket Listing
UXO	Unexploded Ordnance Sites
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
HIST CORTESE	Hazardous Waste & Substance Site List
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
UIC GEO	UIC GEO (GEOTRACKER)
WASTEWATER PITS	Oil Wastewater Pits Listing
WDS	Waste Discharge System
WIP	Well Investigation Program Case List
MILITARY PRIV SITES	MILITARY PRIV SITES (GEOTRACKER)
PROJECT	PROJECT (GEOTRACKER)
WDR	Waste Discharge Requirements Listing
CIWQS	California Integrated Water Quality System
CERS	CERS
NON-CASE INFO	NON-CASE INFO (GEOTRACKER)
OTHER OIL GAS	OTHER OIL & GAS (GEOTRACKER)
PROD WATER PONDS	PROD WATER PONDS (GEOTRACKER)
SAMPLING POINT	SAMPLING POINT (GEOTRACKER)
WELL STIM PROJ	Well Stimulation Project (GEOTRACKER)
MINES MRDS	Mineral Resources Data System
HWTS	Hazardous Waste Tracking System

EDR HIGH RISK HISTORICAL RECORDS

EDR Exclusive Records

EDR MGP	EDR Proprietary Manufactured Gas Plants
EDR Hist Auto	EDR Exclusive Historical Auto Stations

EXECUTIVE SUMMARY

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.

STANDARD ENVIRONMENTAL RECORDS

Lists of state- and tribal hazardous waste facilities

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 07/22/2021 has revealed that there is 1 ENVIROSTOR site within approximately 1 mile of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
THE CLUB K-8 SCHOOL Facility Id: 33010067 Status: No Further Action	***EVANS ROAD/NOVA LANE***	***S 1/2 - 1 (0.500 mi.)***	***4***	***17***

Lists of state and tribal registered storage tanks

UST: The Underground Storage Tank database contains registered USTs. USTs are regulated under Subtitle I of the Resource Conservation and Recovery Act (RCRA). The data come from the State Water Resources Control Board's Hazardous Substance Storage Container Database.

A review of the UST list, as provided by EDR, has revealed that there is 1 UST site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EMARRA, INC.	1765 ETHANAC RD	NNW 0 - 1/8 (0.005 mi.)	A1	9
Database: RIVERSIDE CO. UST, Date of Government Version: 09/29/2021				
Database: UST, Date of Government Version: 09/07/2021				

ADDITIONAL ENVIRONMENTAL RECORDS

Local Lists of Hazardous waste / Contaminated Sites

CERS HAZ WASTE: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

A review of the CERS HAZ WASTE list, as provided by EDR, and dated 07/15/2021 has revealed that there is 1 CERS HAZ WASTE site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EMARRA, INC	***1765 ETHANAC RD***	***NNW 0 - 1/8 (0.005 mi.)***	***A2***	***9***

Local Lists of Registered Storage Tanks

CERS TANKS: List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

A review of the CERS TANKS list, as provided by EDR, and dated 07/15/2021 has revealed that there is 1 CERS TANKS site within approximately 0.25 miles of the target property.

Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
EMARRA, INC	***1765 ETHANAC RD***	***NNW 0 - 1/8 (0.005 mi.)***	***A2***	***9***

Other Ascertainable Records

RCRA NonGen / NLR: 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.

A review of the RCRA NonGen / NLR list, as provided by EDR, and dated 09/13/2021 has revealed that

there is 1 RCRA NonGen / NLR site within approximately 0.25 miles of the target property.

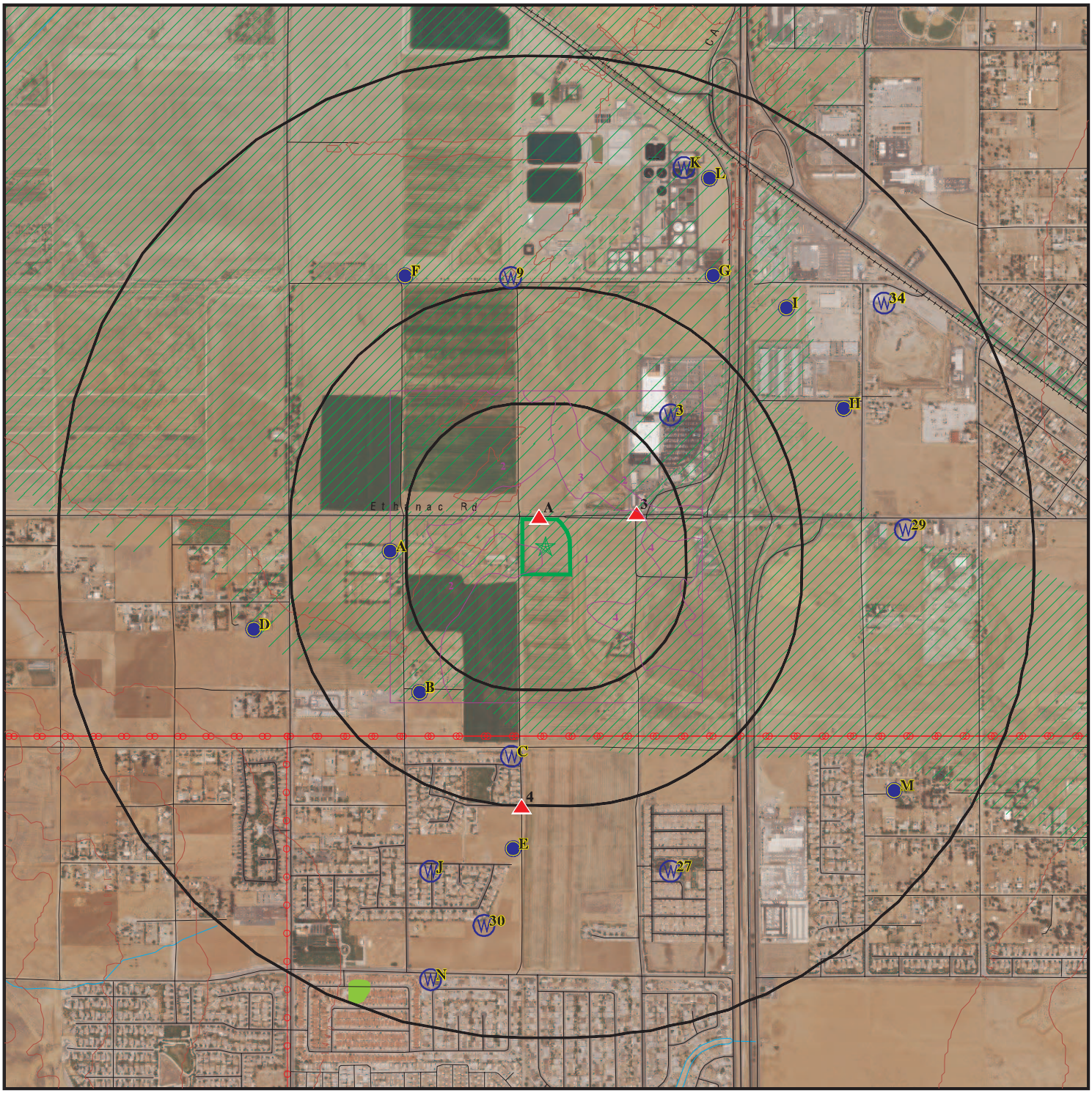
Equal/Higher Elevation	Address	Direction / Distance	Map ID	Page
WASTE MANAGEMENT OF EPA ID:: CAP000007914	26824 ETHANAC RD	ENE 1/8 - 1/4 (0.155 mi.)	3	15

EXECUTIVE SUMMARY

Due to poor or inadequate address information, the following sites were not mapped. Count: 1 records.

Site Name	Database(s)
THE HOME DEPOT STORE #6875	CERS HAZ WASTE, CERS

OVERVIEW MAP - 6809919.2S



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

Special Flood Hazard Area (1%)

0.2% Annual Chance Flood Hazard

National Wetland Inventory

State Wetlands

Areas of Concern

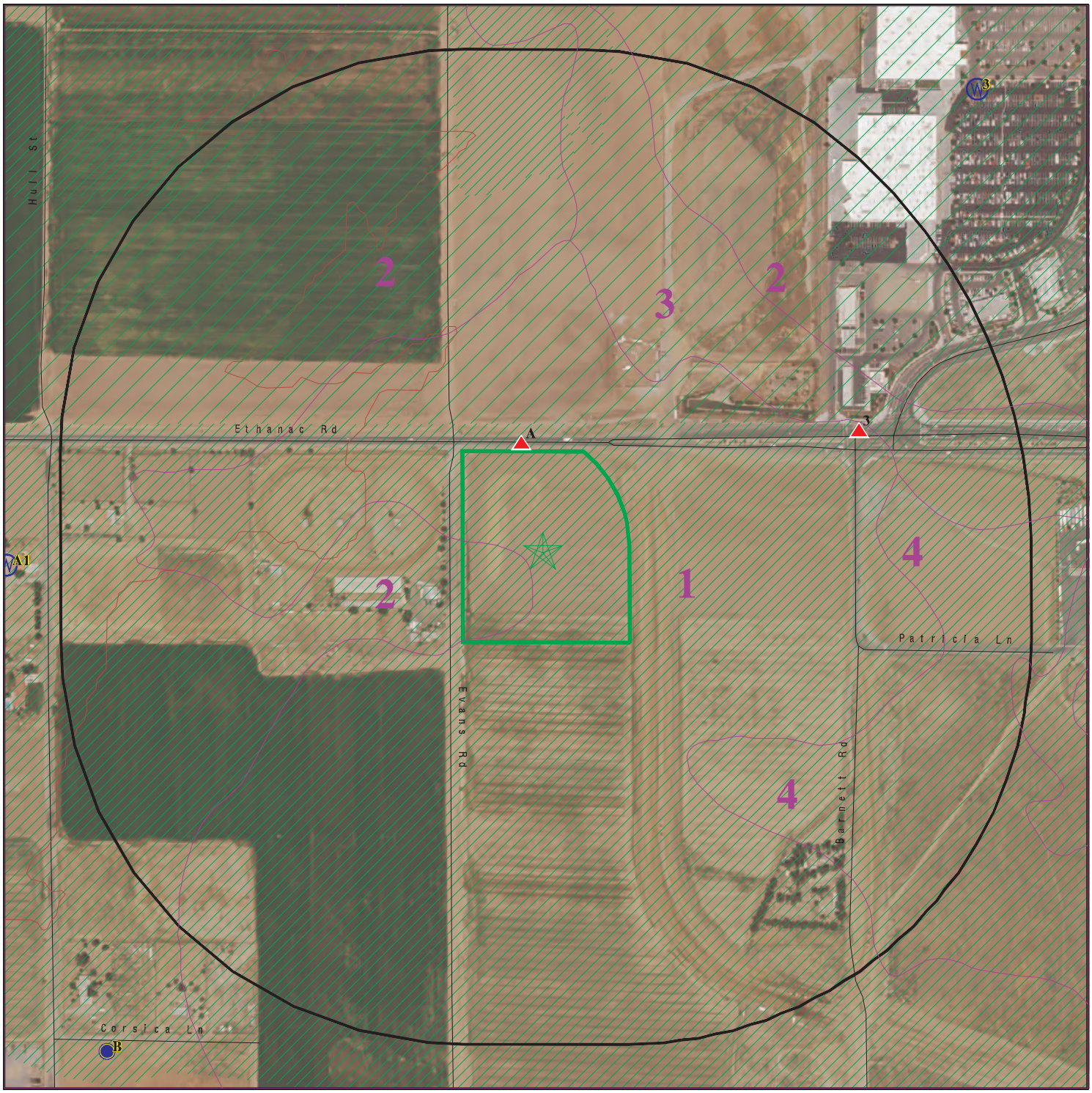
N

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:	APN 331-060-018	CLIENT:	LOR Geotechnical Group, Inc.
ADDRESS:	Ethanac Road/Evans Road Menifee CA 92585	CONTACT:	Mathew Hunt
		INQUIRY #:	6809919.2s
LAT/LONG:	33.742037 / 117.196699	DATE:	January 05, 2022 8:14 pm

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DETAIL MAP - 6809919.2S



- 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
- Special Flood Hazard Area (1%)
- 0.2% Annual Chance Flood Hazard
- 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:	APN 331-060-018	CLIENT:	LOR Geotechnical Group, Inc.
ADDRESS:	Ethanac Road/Evans Road Menifee CA 92585	CONTACT:	Mathew Hunt
		INQUIRY #:	6809919.2s
LAT/LONG:	33.742037 / 117.196699	DATE:	January 05, 2022 8:15 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								
Lists of Federal NPL (Superfund) sites								
NPL	1.000		0	0	0	0	NR	0
Proposed NPL	1.000		0	0	0	0	NR	0
NPL LIENS	1.000		0	0	0	0	NR	0
Lists of Federal Delisted NPL sites								
Delisted NPL	1.000		0	0	0	0	NR	0
Lists of Federal sites subject to CERCLA removals and CERCLA orders								
FEDERAL FACILITY	0.500		0	0	0	NR	NR	0
SEMS	0.500		0	0	0	NR	NR	0
Lists of Federal CERCLA sites with NFRAP								
SEMS-ARCHIVE	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA facilities undergoing Corrective Action								
CORRACTS	1.000		0	0	0	0	NR	0
Lists of Federal RCRA TSD facilities								
RCRA-TSDF	0.500		0	0	0	NR	NR	0
Lists of Federal RCRA generators								
RCRA-LQG	0.250		0	0	NR	NR	NR	0
RCRA-SQG	0.250		0	0	NR	NR	NR	0
RCRA-VSQG	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 CONTROLS	0.500		0	0	0	NR	NR	0
Federal ERNS list								
ERNS	0.001		0	NR	NR	NR	NR	0
Lists of state- and tribal (Superfund) equivalent sites								
RESPONSE	1.000		0	0	0	0	NR	0
Lists of state- and tribal hazardous waste facilities								
ENVIROSTOR	1.000		0	0	0	1	NR	1
Lists of state and tribal landfills and solid waste disposal facilities								
SWF/LF	0.500		0	0	0	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
Lists of state and tribal leaking storage tanks								
LUST	0.500		0	0	0	NR	NR	0
INDIAN LUST	0.500		0	0	0	NR	NR	0
CPS-SLIC	0.500		0	0	0	NR	NR	0
Lists of state and tribal registered storage tanks								
FEMA UST	0.250		0	0	NR	NR	NR	0
UST	0.250		1	0	NR	NR	NR	1
AST	0.250		0	0	NR	NR	NR	0
INDIAN UST	0.250		0	0	NR	NR	NR	0
Lists of 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
Lists of state and tribal brownfield 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	0	NR	NR	0
HAULERS	0.001		0	NR	NR	NR	NR	0
INDIAN ODI	0.500		0	0	0	NR	NR	0
ODI	0.500		0	0	0	NR	NR	0
DEBRIS REGION 9	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	0.001		0	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	0.001		0	NR	NR	NR	NR	0
CERS HAZ WASTE	0.250		1	0	NR	NR	NR	1
Toxic Pits	1.000		0	0	0	0	NR	0
US CDL	0.001		0	NR	NR	NR	NR	0
PFAS	0.500		0	0	0	NR	NR	0
AQUEOUS FOAM	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

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
CERS TANKS	0.250		1	0	NR	NR	NR	1
Local Land Records								
LIENS	0.001		0	NR	NR	NR	NR	0
LIENS 2	0.001		0	NR	NR	NR	NR	0
DEED	0.500		0	0	0	NR	NR	0
Records of Emergency Release Reports								
HMIRS	0.001		0	NR	NR	NR	NR	0
CHMIRS	0.001		0	NR	NR	NR	NR	0
LDS	0.001		0	NR	NR	NR	NR	0
MCS	0.001		0	NR	NR	NR	NR	0
SPILLS 90	0.001		0	NR	NR	NR	NR	0
Other Ascertainable Records								
RCRA NonGen / NLR	0.250		0	1	NR	NR	NR	1
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	0.001		0	NR	NR	NR	NR	0
EPA WATCH LIST	0.001		0	NR	NR	NR	NR	0
2020 COR ACTION	0.250		0	0	NR	NR	NR	0
TSCA	0.001		0	NR	NR	NR	NR	0
TRIS	0.001		0	NR	NR	NR	NR	0
SSTS	0.001		0	NR	NR	NR	NR	0
ROD	1.000		0	0	0	0	NR	0
RMP	0.001		0	NR	NR	NR	NR	0
RAATS	0.001		0	NR	NR	NR	NR	0
PRP	0.001		0	NR	NR	NR	NR	0
PADS	0.001		0	NR	NR	NR	NR	0
ICIS	0.001		0	NR	NR	NR	NR	0
FTTS	0.001		0	NR	NR	NR	NR	0
MLTS	0.001		0	NR	NR	NR	NR	0
COAL ASH DOE	0.001		0	NR	NR	NR	NR	0
COAL ASH EPA	0.500		0	0	0	NR	NR	0
PCB TRANSFORMER	0.001		0	NR	NR	NR	NR	0
RADINFO	0.001		0	NR	NR	NR	NR	0
HIST FTTS	0.001		0	NR	NR	NR	NR	0
DOT OPS	0.001		0	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	0.001		0	NR	NR	NR	NR	0
US AIRS	0.001		0	NR	NR	NR	NR	0
US MINES	0.250		0	0	NR	NR	NR	0
ABANDONED MINES	0.250		0	0	NR	NR	NR	0
FINDS	0.001		0	NR	NR	NR	NR	0
ECHO	0.001		0	NR	NR	NR	NR	0
DOCKET HWC	0.001		0	NR	NR	NR	NR	0
UXO	1.000		0	0	0	0	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
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	0.001		0	NR	NR	NR	NR	0
ENF	0.001		0	NR	NR	NR	NR	0
Financial Assurance	0.001		0	NR	NR	NR	NR	0
HAZNET	0.001		0	NR	NR	NR	NR	0
ICE	0.001		0	NR	NR	NR	NR	0
HIST CORTESE	0.500		0	0	0	NR	NR	0
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	0.001		0	NR	NR	NR	NR	0
PEST LIC	0.001		0	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	0.001		0	NR	NR	NR	NR	0
UIC GEO	0.001		0	NR	NR	NR	NR	0
WASTEWATER PITS	0.500		0	0	0	NR	NR	0
WDS	0.001		0	NR	NR	NR	NR	0
WIP	0.250		0	0	NR	NR	NR	0
MILITARY PRIV SITES	0.001		0	NR	NR	NR	NR	0
PROJECT	0.001		0	NR	NR	NR	NR	0
WDR	0.001		0	NR	NR	NR	NR	0
CIWQS	0.001		0	NR	NR	NR	NR	0
CERS	0.001		0	NR	NR	NR	NR	0
NON-CASE INFO	0.001		0	NR	NR	NR	NR	0
OTHER OIL GAS	0.001		0	NR	NR	NR	NR	0
PROD WATER PONDS	0.001		0	NR	NR	NR	NR	0
SAMPLING POINT	0.001		0	NR	NR	NR	NR	0
WELL STIM PROJ	0.001		0	NR	NR	NR	NR	0
MINES MRDS	0.001		0	NR	NR	NR	NR	0
HWTS	TP		NR	NR	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	0.001		0	NR	NR	NR	NR	0
RGA LUST	0.001		0	NR	NR	NR	NR	0
- Totals --		0	3	1	0	1	0	5

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

NOTES:

TP = Target Property

NR = Not Requested at this Search Distance

Sites may be listed in more than one database

A1 **EMARRA, INC.** **UST** **U004312094**
NNW **1765 ETHANAC RD** **N/A**
< 1/8 **PERRIS, CA 92570**
0.005 mi.
29 ft. **Site 1 of 2 in cluster A**

Relative:
Higher

Actual:
1422 ft.

RIVERSIDE CO. UST:
Name: EMARRA, INC.
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570
Region: RIVERSIDE
Total Tanks: 3

UST:
Name: EMARRA, INC
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570
Facility ID: Not reported
Permitting Agency: Riverside County Department of Environme
CERSID: Not reported
Latitude: 33.74301
Longitude: -117.19693

Name: EMARRA, INC
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570
Facility ID: Not reported
Permitting Agency: Riverside County Department of Environmental Health
CERSID: 10790992
Latitude: 33.74301
Longitude: -117.19693

Name: EMARRA, INC
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570
Facility ID: Not reported
Permitting Agency: Riverside County Department of Environmental Health
CERSID: Not reported
Latitude: 33.74301
Longitude: -117.19693

A2 **EMARRA, INC** **CERS HAZ WASTE** **S124437950**
NNW **1765 ETHANAC RD** **CERS TANKS** **N/A**
< 1/8 **PERRIS, CA 92570** **CERS**
0.005 mi.
29 ft. **Site 2 of 2 in cluster A**

Relative:
Higher

Actual:
1422 ft.

CERS HAZ WASTE:
Name: EMARRA, INC
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570
Site ID: 521879
CERS ID: 10790992
CERS Description: Hazardous Waste Generator

CERS TANKS:
Name: EMARRA, INC
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570

EMARRA, INC (Continued) **S124437950**

Site ID: 521879
CERS ID: 10790992
CERS Description: Underground Storage Tank

CERS:
Name: EMARRA, INC
Address: 1765 ETHANAC RD
City,State,Zip: PERRIS, CA 92570
Site ID: 521879
CERS ID: 10790992
CERS Description: Chemical Storage Facilities

Violations:
Site ID: 521879
Site Name: EMARRA, INC
Violation Date: 04-22-2019
Citation: 23 CCR 16 2641(h) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2641(h)
Violation Description: Failure to have an approved UST Monitoring Plan.
Violation Notes: Returned to compliance on 06/13/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 521879
Site Name: EMARRA, INC
Violation Date: 04-22-2019
Citation: 23 CCR 16 2712 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2712
Violation Description: Failure to comply with any of the applicable requirements of the permit issued for the operation of the UST system.
Violation Notes: Returned to compliance on 06/13/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 521879
Site Name: EMARRA, INC
Violation Date: 04-22-2019
Citation: 23 CCR 16 2712(i) - California Code of Regulations, Title 23, Chapter 16, Section(s) 2712(i)
Violation Description: Failure to retain a copy of the permit to operate at the facility.
Violation Notes: Returned to compliance on 06/13/2019.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Site ID: 521879
Site Name: EMARRA, INC
Violation Date: 04-15-2021
Citation: 23 CCR 16 2712 - California Code of Regulations, Title 23, Chapter 16, Section(s) 2712
Violation Description: Failure to comply with any of the applicable requirements of the permit issued for the operation of the UST system.
Violation Notes: Not reported
Violation Division: Riverside County Department of Env Health
Violation Program: UST

EMARRA, INC (Continued) **S124437950**

Violation Source:	CERS
Site ID:	521879
Site Name:	EMARRA, INC
Violation Date:	02-27-2020
Citation:	HSC 6.95 25508(a)(1) - California Health and Safety Code, Chapter 6.95, Section(s) 25508(a)(1)
Violation Description:	Failure to complete and electronically submit hazardous material inventory information for all reportable hazardous materials on site at or above reportable quantities.
Violation Notes:	Returned to compliance on 03/20/2020. OBSERVATION: The chemical inventory description page submitted for Carbon Dioxide (CO2) contained incorrect information. CO2 has a store pressure "Above Amient". Observed a liquified CO2 tank at the facility. The CO2 tank should be reported in gallons, not cubic feet and the physical state updated to "liquid" with the storage updated to "Tank Inside Building". The Propane should also be updated with a physical state of "liquid" and reported in gallons. CORRECTIVE ACTION: Owner/operator shall update the chemical inventory pages for CO2 and Propane and submit to the statewide information management system (e.g. CERS) at http://cers.calepa.ca.gov. Please refer to a current Safety Data Sheet (SDS) for guidance.
Violation Division:	Riverside County Department of Env Health
Violation Program:	HMRRP
Violation Source:	CERS
Site ID:	521879
Site Name:	EMARRA, INC
Violation Date:	04-22-2019
Citation:	HSC 6.7 25284 - California Health and Safety Code, Chapter 6.7, Section(s) 25284
Violation Description:	Failure to obtain a valid permit to operate from the UPA including but not limited to unpaid permit fees.
Violation Notes:	Returned to compliance on 06/13/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	521879
Site Name:	EMARRA, INC
Violation Date:	04-22-2019
Citation:	HSC 6.7 25284, 25286 - California Health and Safety Code, Chapter 6.7, Section(s) 25284, 25286
Violation Description:	Failure to submit a complete and accurate application for a permit to operate a UST, or for renewal of the permit.
Violation Notes:	Returned to compliance on 06/13/2019.
Violation Division:	Riverside County Department of Env Health
Violation Program:	UST
Violation Source:	CERS
Site ID:	521879
Site Name:	EMARRA, INC
Violation Date:	04-14-2020
Citation:	HSC 6.7 25284, 25286 - California Health and Safety Code, Chapter 6.7, Section(s) 25284, 25286
Violation Description:	Failure to submit a complete and accurate application for a permit to operate a UST, or for renewal of the permit.

EMARRA, INC (Continued) **S124437950**

Violation Notes: Returned to compliance on 06/17/2020. OBSERVATION: Observed UST tank information pages for all three (3) tanks submitted in CERS to be inaccurate and/or missing information. Please reference CERS notes to correction the pages as needed. Each tank information page has different items to correct. CORRECTIVE ACTION: Owner/operator shall make the corrections noted in CERS to the UST tank information pages and re-submit updated forms in CERS.
Violation Division: Riverside County Department of Env Health
Violation Program: UST
Violation Source: CERS

Evaluation:
Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-27-2020
Violations Found: No
Eval Type: Routine done by local agency
Eval Notes: This facility is a gas station with a convenience store and car wash. The facility has not generated any waste at this time. No waste pick-ups have occurred.
Eval Division: Riverside County Department of Env Health
Eval Program: HW
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 02-27-2020
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: HMRRP
Eval Source: CERS

Eval General Type: Other/Unknown
Eval Date: 04-22-2019
Violations Found: No
Eval Type: Other, not routine, done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-15-2021
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-22-2019
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Not reported
Eval Division: Riverside County Department of Env Health
Eval Program: UST

EMARRA, INC (Continued) **S124437950**

Eval Source: CERS

Eval General Type: Compliance Evaluation Inspection
Eval Date: 04-14-2020
Violations Found: Yes
Eval Type: Routine done by local agency
Eval Notes: Note: Based on how VR 208 sensors are installed in UDCs, owner should ensure sensors are not accidentally left raised up from bottom of the UDC.
Eval Division: Riverside County Department of Env Health
Eval Program: UST
Eval Source: CERS

Affiliation:
Affiliation Type Desc: Environmental Contact
Entity Name: Elizabeth Alabbasi
Entity Title: Not reported
Affiliation Address: 16810 VAN BUREN BLVD., SUITE 200
Affiliation City: RIVERSIDE
Affiliation State: CA
Affiliation Country: Not reported
Affiliation Zip: 92504
Affiliation Phone: Not reported

Affiliation Type Desc: Identification Signer
Entity Name: Gregory Roberts
Entity Title: CERS Agent
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: Parent Corporation
Entity Name: EMARRA, INC
Entity Title: Not reported
Affiliation Address: Not reported
Affiliation City: Not reported
Affiliation State: Not reported
Affiliation Country: Not reported
Affiliation Zip: Not reported
Affiliation Phone: Not reported

Affiliation Type Desc: UST Property Owner Name
Entity Name: EMARRA, LP
Entity Title: Not reported
Affiliation Address: 764 W. RAMONA EXPRESSWAY
Affiliation City: PERRIS
Affiliation State: CA
Affiliation Country: United States
Affiliation Zip: 92571
Affiliation Phone: (951) 776-9300

Affiliation Type Desc: Document Preparer
Entity Name: Gregory Roberts
Entity Title: Not reported

EMARRA, INC (Continued) **S124437950**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported
Affiliation Type Desc:	Facility Mailing Address
Entity Name:	Mailing Address
Entity Title:	Not reported
Affiliation Address:	1765 ETHANAC RD.
Affiliation City:	PERRIS
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92570
Affiliation Phone:	Not reported
Affiliation Type Desc:	Operator
Entity Name:	EMARRA, INC
Entity Title:	Not reported
Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	(951) 776-9300
Affiliation Type Desc:	Legal Owner
Entity Name:	EMARRA, INC.
Entity Title:	Not reported
Affiliation Address:	764 W. RAMONA EXPRESSWAY, SUITE C
Affiliation City:	PERRIS
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92571
Affiliation Phone:	(951) 776-9300
Affiliation Type Desc:	Property Owner
Entity Name:	EMARRA, INC.
Entity Title:	Not reported
Affiliation Address:	764 W. RAMONA EXPRESSWAY, SUITE C
Affiliation City:	PERRIS
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92571
Affiliation Phone:	(951) 776-9300
Affiliation Type Desc:	UST Tank Operator
Entity Name:	EMARRA, INC.
Entity Title:	Not reported
Affiliation Address:	16810 VAN BUREN BLVD., SUITE 200
Affiliation City:	RIVERSIDE
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92504
Affiliation Phone:	(951) 780-1400

EMARRA, INC (Continued) **S124437950**

Affiliation Type Desc:	UST Tank Owner
Entity Name:	EMARRA, LP
Entity Title:	Not reported
Affiliation Address:	764 W. RAMONA EXPRESSWAY
Affiliation City:	PERRIS
Affiliation State:	CA
Affiliation Country:	United States
Affiliation Zip:	92571
Affiliation Phone:	(951) 776-9300

Affiliation Type Desc:	CUPA District
Entity Name:	Riverside Cnty Env Health
Entity Title:	Not reported
Affiliation Address:	4065 County Circle Drive, Room 104
Affiliation City:	Riverside
Affiliation State:	CA
Affiliation Country:	Not reported
Affiliation Zip:	92503
Affiliation Phone:	(951) 358-5055

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3 **WASTE MANAGEMENT OF MARINO VALLEY** **RCRA NonGen / NLR** **1025878215**
ENE **26824 ETHANAC RD** **CAP000007914**
1/8-1/4 **PERRIS, CA 92585**
0.155 mi.
817 ft.

Relative: **Higher**

Actual: **1424 ft.**

RCRA NonGen / NLR:

Date Form Received by Agency:	20060823
Handler Name:	WASTE MANAGEMENT OF MARINO VALLEY
Handler Address:	26824 ETHANAC RD
Handler City,State,Zip:	PERRIS, CA 92585
EPA ID:	CAP000007914
Contact Name:	SARAH PYLON
Contact Address:	17700 INDIAN ST
Contact City,State,Zip:	MARINO VALLEY, CA 92511
Contact Telephone:	909-579-0321
Contact Fax:	Not reported
Contact Email:	Not reported
Contact Title:	Not reported
EPA Region:	09
Land Type:	Not reported
Federal Waste Generator Description:	Not reported
Non-Notifier:	Not reported
Biennial Report Cycle:	Not reported
Accessibility:	Not reported
Active Site Indicator:	Not reported
State District Owner:	Not reported
State District:	Not reported
Mailing Address:	17700 INDIAN ST
Mailing City,State,Zip:	MARINO VALLEY, CA 92511
Owner Name:	Not reported
Owner Type:	Not reported
Operator Name:	Not reported
Operator Type:	Not reported
Short-Term Generator Activity:	No
Importer Activity:	No
Mixed Waste Generator:	No

WASTE MANAGEMENT OF MARINO VALLEY (Continued) **1025878215**

Transporter Activity:	No
Transfer Facility Activity:	No
Recycler Activity with Storage:	No
Small Quantity On-Site Burner Exemption:	No
Smelting Melting and Refining Furnace Exemption:	No
Underground Injection Control:	No
Off-Site Waste Receipt:	No
Universal Waste Indicator:	No
Universal Waste Destination Facility:	No
Federal Universal Waste:	No
Active Site Fed-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site Converter Treatment storage and Disposal Facility:	Not reported
Active Site State-Reg Treatment Storage and Disposal Facility:	Not reported
Active Site State-Reg Handler:	---
Federal Facility Indicator:	Not reported
Hazardous Secondary Material Indicator:	N
Sub-Part K Indicator:	Not reported
Commercial TSD Indicator:	No
Treatment Storage and Disposal Type:	Not reported
2018 GPRA Permit Baseline:	Not on the Baseline
2018 GPRA Renewals Baseline:	Not on the Baseline
Permit Renewals Workload Universe:	Not reported
Permit Workload Universe:	Not reported
Permit Progress Universe:	Not reported
Post-Closure Workload Universe:	Not reported
Closure Workload Universe:	Not reported
202 GPRA Corrective Action Baseline:	No
Corrective Action Workload Universe:	No
Subject to Corrective Action Universe:	No
Non-TSDFs Where RCRA CA has Been Imposed Universe:	No
TSDFs Potentially Subject to CA Under 3004 (u)/(v) Universe:	No
TSDFs Only Subject to CA under Discretionary Auth Universe:	No
Corrective Action Priority Ranking:	No NCAPS ranking
Environmental Control Indicator:	No
Institutional Control Indicator:	No
Human Exposure Controls Indicator:	N/A
Groundwater Controls Indicator:	N/A
Operating TSDF Universe:	Not reported
Full Enforcement Universe:	Not reported
Significant Non-Complier Universe:	No
Unaddressed Significant Non-Complier Universe:	No
Addressed Significant Non-Complier Universe:	No
Significant Non-Complier With a Compliance Schedule Universe:	No
Financial Assurance Required:	Not reported
Handler Date of Last Change:	20061006
Recognized Trader-Importer:	No
Recognized Trader-Exporter:	No
Importer of Spent Lead Acid Batteries:	No
Exporter of Spent Lead Acid Batteries:	No
Recycler Activity Without Storage:	No
Manifest Broker:	No
Sub-Part P Indicator:	No

Historic Generators:

Receive Date:	20060823
Handler Name:	WASTE MANAGEMENT OF MARINO VALLEY

WASTE MANAGEMENT OF MARINO VALLEY (Continued) **1025878215**

Federal Waste Generator Description:	Not reported
State District Owner:	Not reported
Large Quantity Handler of Universal Waste:	No
Recognized Trader Importer:	No
Recognized Trader Exporter:	No
Spent Lead Acid Battery Importer:	No
Spent Lead Acid Battery Exporter:	No
Current Record:	Yes
Non Storage Recycler Activity:	Not reported
Electronic Manifest Broker:	Not reported

List of NAICS Codes and Descriptions:
NAICS Codes: No NAICS Codes Found

Facility Has Received Notices of Violations:
Violations: No Violations Found

Evaluation Action Summary:
Evaluations: No Evaluations Found

4
South
1/2-1
0.500 mi.
2642 ft.

THE CLUB K-8 SCHOOL
EVANS ROAD/NOVA LANE
ROMOLAND, CA 92586

ENVIROSTOR **S105628774**
SCH **N/A**
CERS

Relative:
Higher

Actual:
1425 ft.

ENVIROSTOR:

Name:	THE CLUB K-8 SCHOOL
Address:	EVANS ROAD/NOVA LANE
City,State,Zip:	ROMOLAND, CA 92586
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

THE CLUB K-8 SCHOOL (Continued) **S105628774**

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
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

THE CLUB K-8 SCHOOL (Continued) **S105628774**

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:

Name:	THE CLUB K-8 SCHOOL
Address:	EVANS ROAD/NOVA LANE
City,State,Zip:	ROMOLAND, CA 92586
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
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

THE CLUB K-8 SCHOOL (Continued) **S105628774**

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
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

CERS:
Name: THE CLUB K-8 SCHOOL
Address: EVANS ROAD/NOVA LANE
City,State,Zip: ROMOLAND, CA 92586
Site ID: 343858
CERS ID: 33010067
CERS Description: School Investigation

Affiliation:
Affiliation Type Desc: Supervisor
Entity Name: JAVIER HINOJOSA
Entity Title: Not reported

THE CLUB K-8 SCHOOL (Continued) **S105628774**

Affiliation Address:	Not reported
Affiliation City:	Not reported
Affiliation State:	Not reported
Affiliation Country:	Not reported
Affiliation Zip:	Not reported
Affiliation Phone:	Not reported

Count: 1 records. ORPHAN SUMMARY

City	EDR ID	Site Name	Site Address	Zip	Database(s)
PERRIS	S123516453	THE HOME DEPOT STORE #6875	3150 CASE RD BLDG P	92570	CERS HAZ WASTE, CERS

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

Lists of Federal NPL (Superfund) sites

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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: N/A
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: N/A
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
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

Lists of Federal Delisted NPL sites

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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: N/A
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Quarterly

Lists of Federal sites subject to CERCLA removals and CERCLA orders

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: 05/25/2021
Date Data Arrived at EDR: 06/24/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 88

Source: Environmental Protection Agency
Telephone: 703-603-8704
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Quarterly

Lists of Federal CERCLA sites with NFRAP

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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA facilities undergoing Corrective Action

CORRACTS: Corrective Action Report

CORRACTS identifies hazardous waste handlers with RCRA corrective action activity.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: EPA
Telephone: 800-424-9346
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA TSD facilities

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: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

Lists of Federal RCRA generators

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: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
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: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

RCRA-VSQG: RCRA - Very Small Quantity Generators (Formerly 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). Very small quantity generators (VSQGs) generate less than 100 kg of hazardous waste, or less than 1 kg of acutely hazardous waste per month.

Date of Government Version: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
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: 07/12/2021
Date Data Arrived at EDR: 08/06/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 77

Source: Department of the Navy
Telephone: 843-820-7326
Last EDR Contact: 11/08/2021
Next Scheduled EDR Contact: 02/21/2022
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: 08/23/2021
Date Data Arrived at EDR: 08/23/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/18/2021
Next Scheduled EDR Contact: 03/06/2022
Data Release Frequency: Varies

US INST CONTROLS: Institutional Controls Sites List

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: 08/23/2021
Date Data Arrived at EDR: 08/23/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 81

Source: Environmental Protection Agency
Telephone: 703-603-0695
Last EDR Contact: 11/19/2021
Next Scheduled EDR Contact: 03/07/2022
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: 09/13/2021
Date Data Arrived at EDR: 09/21/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 85

Source: National Response Center, United States Coast Guard
Telephone: 202-267-2180
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

Lists of state- and tribal (Superfund) equivalent sites

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: 07/22/2021
Date Data Arrived at EDR: 07/22/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Quarterly

Lists of state- and tribal hazardous waste facilities

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: 07/22/2021
Date Data Arrived at EDR: 07/22/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Quarterly

Lists of state and tribal landfills and solid waste disposal facilities

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: 08/09/2021
Date Data Arrived at EDR: 08/10/2021
Date Made Active in Reports: 11/05/2021
Number of Days to Update: 87

Source: Department of Resources Recycling and Recovery
Telephone: 916-341-6320
Last EDR Contact: 11/09/2021
Next Scheduled EDR Contact: 02/21/2022
Data Release Frequency: Quarterly

Lists of state and tribal leaking storage tanks

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 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 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: No Update Planned

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 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

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: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83

Source: State Water Resources Control Board
Telephone: see region list
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Quarterly

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 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: No Update Planned

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

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: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA, Region 5
Telephone: 312-886-7439
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 04/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: Environmental Protection Agency
Telephone: 415-972-3372
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 8
Telephone: 303-312-6271
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 06/01/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 05/17/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88
Source: EPA Region 6
Telephone: 214-665-6597
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90
Source: EPA Region 4
Telephone: 404-562-8677
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

CPS-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: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

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: No Update Planned

Lists of state and tribal registered storage tanks

FEMA UST: Underground Storage Tank Listing
A listing of all FEMA owned underground storage tanks.

Date of Government Version: 01/29/2021
Date Data Arrived at EDR: 02/17/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 33
Source: FEMA
Telephone: 202-646-5797
Last EDR Contact: 12/18/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Varies

MILITARY UST SITES: Military UST Sites (GEOTRACKER)
Military ust sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

UST CLOSURE: Proposed Closure of Underground Storage Tank (UST) Cases

UST cases that are being considered for closure by either the State Water Resources Control Board or the Executive Director have been posted for a 60-day public comment period. UST Case Closures being proposed for consideration by the State Water Resources Control Board. These are primarily UST cases that meet closure criteria under the decisional framework in State Water Board Resolution No. 92-49 and other Board orders. UST Case Closures proposed for consideration by the Executive Director pursuant to State Water Board Resolution No. 2012-0061. These are cases that meet the criteria of the Low-Threat UST Case Closure Policy. UST Case Closure Review Denials and Approved Orders.

Date of Government Version: 08/18/2021
Date Data Arrived at EDR: 09/08/2021
Date Made Active in Reports: 12/03/2021
Number of Days to Update: 86

Source: State Water Resources Control Board
Telephone: 916-327-7844
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

UST: Active UST Facilities

Active UST facilities gathered from the local regulatory agencies

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/30/2021
Number of Days to Update: 84

Source: SWRCB
Telephone: 916-341-5851
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
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: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 9
Telephone: 415-972-3368
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 05/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 8
Telephone: 303-312-6137
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 06/01/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 7
Telephone: 913-551-7003
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 04/06/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 5
Telephone: 312-886-6136
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 04/27/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 10
Telephone: 206-553-2857
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 04/28/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA, Region 1
Telephone: 617-918-1313
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

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: 05/28/2021
Date Data Arrived at EDR: 06/22/2021
Date Made Active in Reports: 09/20/2021
Number of Days to Update: 90

Source: EPA Region 4
Telephone: 404-562-9424
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
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: 05/17/2021
Date Data Arrived at EDR: 06/11/2021
Date Made Active in Reports: 09/07/2021
Number of Days to Update: 88

Source: EPA Region 6
Telephone: 214-665-7591
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

Lists of 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: 07/22/2021
Date Data Arrived at EDR: 07/22/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Quarterly

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: 07/08/2021
Next Scheduled EDR Contact: 07/20/2009
Data Release Frequency: Varies

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: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

Lists of state and tribal brownfield 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: 09/20/2021
Date Data Arrived at EDR: 09/21/2021
Date Made Active in Reports: 12/08/2021
Number of Days to Update: 78

Source: State Water Resources Control Board
Telephone: 916-323-7905
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
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: 06/10/2021
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 68

Source: Environmental Protection Agency
Telephone: 202-566-2777
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
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: 10/22/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: No Update Planned

SWRCY: Recycler Database
A listing of recycling facilities in California.

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/08/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 82

Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Quarterly

HAULERS: Registered Waste Tire Haulers Listing
A listing of registered waste tire haulers.

Date of Government Version: 09/14/2021
Date Data Arrived at EDR: 11/11/2021
Date Made Active in Reports: 11/23/2021
Number of Days to Update: 12

Source: Integrated Waste Management Board
Telephone: 916-341-6422
Last EDR Contact: 11/05/2021
Next Scheduled EDR Contact: 02/21/2022
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: 10/22/2021
Next Scheduled EDR Contact: 02/07/2022
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: 10/14/2021
Next Scheduled EDR Contact: 01/31/2022
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: 10/28/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Varies

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

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: 05/18/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 77

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
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: 07/22/2021
Date Data Arrived at EDR: 07/22/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 10/26/2021
Next Scheduled EDR Contact: 02/07/2022
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: 12/31/2019
Date Data Arrived at EDR: 01/20/2021
Date Made Active in Reports: 04/08/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-255-6504
Last EDR Contact: 12/28/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Varies

CERS HAZ WASTE: CERS HAZ WASTE

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, and RCRA LQ HW Generator programs.

Date of Government Version: 07/15/2021
Date Data Arrived at EDR: 07/15/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 83

Source: CalEPA
Telephone: 916-323-2514
Last EDR Contact: 10/19/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Quarterly

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: 05/18/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 77

Source: Drug Enforcement Administration
Telephone: 202-307-1000
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Quarterly

PFAS: PFAS Contamination Site Location Listing

A listing of PFAS contaminated sites included in the GeoTracker database.

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/08/2021
Date Made Active in Reports: 12/01/2021
Number of Days to Update: 84

Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

AQUEOUS FOAM: Former Fire Training Facility Assessments Listing

Airports shown on this list are those believed to use Aqueous Film Forming Foam (AFFF), and certified by the Federal Aviation Administration (FAA) under Title 14, Code of Federal Regulations (CFR), Part 139 (14 CFR Part 139). This list was created by SWRCB using information available from the FAA. Location points shown are from the latitude and longitude listed on the FAA airport master record.

Date of Government Version: 12/01/2019
Date Data Arrived at EDR: 08/19/2021
Date Made Active in Reports: 10/28/2021
Number of Days to Update: 70

Source: State Water Resources Control Board
Telephone: 916-341-5455
Last EDR Contact: 12/10/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

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

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

SAN FRANCISCO AST: Aboveground Storage Tank Site Listing
Aboveground storage tank sites

Date of Government Version: 08/05/2021
Date Data Arrived at EDR: 08/05/2021
Date Made Active in Reports: 10/29/2021
Number of Days to Update: 85

Source: San Francisco County Department of Public Health
Telephone: 415-252-3896
Last EDR Contact: 10/31/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

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

CERS TANKS: California Environmental Reporting System (CERS) Tanks
List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the Aboveground Petroleum Storage and Underground Storage Tank regulatory programs.

Date of Government Version: 07/15/2021
Date Data Arrived at EDR: 07/15/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 83

Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Quarterly

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: 08/25/2021
Date Data Arrived at EDR: 09/03/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 80

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/14/2022
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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 202-564-6023
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
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: 08/30/2021
Date Data Arrived at EDR: 08/31/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 80
Source: DTSC and SWRCB
Telephone: 916-323-3400
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
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: 09/12/2021
Date Data Arrived at EDR: 09/13/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 15
Source: U.S. Department of Transportation
Telephone: 202-366-4555
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
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: 06/30/2021
Date Data Arrived at EDR: 07/15/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 83
Source: Office of Emergency Services
Telephone: 916-845-8400
Last EDR Contact: 10/19/2021
Next Scheduled EDR Contact: 01/31/2022
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: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Qualilty Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
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: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
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: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 27

Source: Environmental Protection Agency
Telephone: (415) 495-8895
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
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: 08/10/2021
Date Data Arrived at EDR: 08/17/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 66

Source: U.S. Army Corps of Engineers
Telephone: 202-528-4285
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 02/28/2022
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: 10/15/2021
Next Scheduled EDR Contact: 01/24/2022
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: 04/02/2018
Date Data Arrived at EDR: 04/11/2018
Date Made Active in Reports: 11/06/2019
Number of Days to Update: 574

Source: U.S. Geological Survey
Telephone: 888-275-8747
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/17/2022
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: 11/08/2021
Next Scheduled EDR Contact: 02/21/2022
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: 09/13/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 13

Source: Environmental Protection Agency
Telephone: 202-566-1917
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
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: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
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: 09/30/2017
Date Data Arrived at EDR: 05/08/2018
Date Made Active in Reports: 07/20/2018
Number of Days to Update: 73

Source: Environmental Protection Agency
Telephone: 703-308-4044
Last EDR Contact: 11/05/2021
Next Scheduled EDR Contact: 02/14/2022
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: 06/17/2020
Date Made Active in Reports: 09/10/2020
Number of Days to Update: 85

Source: EPA
Telephone: 202-260-5521
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 03/28/2022
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: 12/31/2018
Date Data Arrived at EDR: 08/14/2020
Date Made Active in Reports: 11/04/2020
Number of Days to Update: 82
Source: EPA
Telephone: 202-566-0250
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 02/28/2022
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: 07/19/2021
Date Data Arrived at EDR: 07/19/2021
Date Made Active in Reports: 10/12/2021
Number of Days to Update: 85
Source: EPA
Telephone: 202-564-4203
Last EDR Contact: 10/20/2021
Next Scheduled EDR Contact: 01/31/2022
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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24
Source: EPA
Telephone: 703-416-0223
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 03/14/2022
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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 7
Source: Environmental Protection Agency
Telephone: 202-564-8600
Last EDR Contact: 10/18/2021
Next Scheduled EDR Contact: 01/31/2022
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: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 40
Source: EPA
Telephone: 202-564-6023
Last EDR Contact: 12/01/2021
Next Scheduled EDR Contact: 02/14/2022
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: 11/19/2020
Date Data Arrived at EDR: 01/08/2021
Date Made Active in Reports: 03/22/2021
Number of Days to Update: 73
Source: EPA
Telephone: 202-566-0500
Last EDR Contact: 10/08/2021
Next Scheduled EDR Contact: 01/17/2022
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: 12/29/2021
Next Scheduled EDR Contact: 04/18/2022
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: No Update Planned

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: No Update Planned

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: 07/29/2021
Date Data Arrived at EDR: 08/24/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 87
Source: Nuclear Regulatory Commission
Telephone: 301-415-7169
Last EDR Contact: 10/18/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Quarterly

GOVERNMENT RECORDS SEARCHED / DATA CURRENCY TRACKING

COAL ASH DOE: Steam-Electric Plant Operation Data
A listing of power plants that store ash in surface ponds.

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 12/01/2020
Date Made Active in Reports: 02/09/2021
Number of Days to Update: 70
Source: Department of Energy
Telephone: 202-586-8719
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
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: 01/12/2017
Date Data Arrived at EDR: 03/05/2019
Date Made Active in Reports: 11/11/2019
Number of Days to Update: 251
Source: Environmental Protection Agency
Telephone: N/A
Last EDR Contact: 12/02/2021
Next Scheduled EDR Contact: 03/14/2022
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: 09/13/2019
Date Data Arrived at EDR: 11/06/2019
Date Made Active in Reports: 02/10/2020
Number of Days to Update: 96
Source: Environmental Protection Agency
Telephone: 202-566-0517
Last EDR Contact: 11/05/2021
Next Scheduled EDR Contact: 02/14/2022
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: 07/01/2019
Date Data Arrived at EDR: 07/01/2019
Date Made Active in Reports: 09/23/2019
Number of Days to Update: 84
Source: Environmental Protection Agency
Telephone: 202-343-9775
Last EDR Contact: 12/27/2021
Next Scheduled EDR Contact: 04/11/2022
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: 01/02/2020
Date Data Arrived at EDR: 01/28/2020
Date Made Active in Reports: 04/17/2020
Number of Days to Update: 80

Source: Department of Transporation, Office of Pipeline Safety
Telephone: 202-366-4595
Last EDR Contact: 10/26/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Quarterly

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: 06/30/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 07/16/2021
Number of Days to Update: 2

Source: Department of Justice, Consent Decree Library
Telephone: Varies
Last EDR Contact: 01/03/2022
Next Scheduled EDR Contact: 04/18/2022
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: 12/31/2019
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 90

Source: EPA/NTIS
Telephone: 800-424-9346
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
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: 01/04/2022
Next Scheduled EDR Contact: 04/18/2022
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: 07/26/2021
Date Data Arrived at EDR: 07/27/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 87

Source: Department of Energy
Telephone: 202-586-3559
Last EDR Contact: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
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: 08/30/2019
Date Data Arrived at EDR: 11/15/2019
Date Made Active in Reports: 01/28/2020
Number of Days to Update: 74

Source: Department of Energy
Telephone: 505-845-0011
Last EDR Contact: 12/09/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

LEAD SMELTER 1: Lead Smelter Sites
A listing of former lead smelter site locations.

Date of Government Version: 10/20/2021
Date Data Arrived at EDR: 11/05/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 24

Source: Environmental Protection Agency
Telephone: 703-603-8787
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
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: 08/09/2021
Date Data Arrived at EDR: 08/24/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 87

Source: Department of Labor, Mine Safety and Health Administration
Telephone: 303-231-5959
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Semi-Annually

MINES VIOLATIONS: MSHA Violation Assessment Data
Mines violation and assessment information. Department of Labor, Mine Safety & Health Administration.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 89

Source: DOL, Mine Safety & Health Admi
Telephone: 202-693-9424
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

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: 05/06/2020
Date Data Arrived at EDR: 05/27/2020
Date Made Active in Reports: 08/13/2020
Number of Days to Update: 78

Source: USGS
Telephone: 703-648-7709
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/07/2022
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: 11/22/2021
Next Scheduled EDR Contact: 03/07/2022
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: 09/14/2021
Date Data Arrived at EDR: 09/15/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 91

Source: Department of Interior
Telephone: 202-208-2609
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 03/21/2022
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: 05/05/2021
Date Data Arrived at EDR: 05/18/2021
Date Made Active in Reports: 08/17/2021
Number of Days to Update: 91

Source: EPA
Telephone: (415) 947-8000
Last EDR Contact: 11/22/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

UXO: Unexploded Ordnance Sites

A listing of unexploded ordnance site locations

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 07/02/2020
Date Made Active in Reports: 09/17/2020
Number of Days to Update: 77

Source: Department of Defense
Telephone: 703-704-1564
Last EDR Contact: 10/07/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Varies

DOCKET HWC: Hazardous Waste Compliance Docket Listing
A complete list of the Federal Agency Hazardous Waste Compliance Docket Facilities.

Date of Government Version: 05/06/2021
Date Data Arrived at EDR: 05/21/2021
Date Made Active in Reports: 08/11/2021
Number of Days to Update: 82
Source: Environmental Protection Agency
Telephone: 202-564-0527
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

ECHO: Enforcement & Compliance History Information
ECHO provides integrated compliance and enforcement information for about 800,000 regulated facilities nationwide.

Date of Government Version: 06/26/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/28/2021
Number of Days to Update: 89
Source: Environmental Protection Agency
Telephone: 202-564-2280
Last EDR Contact: 01/04/2022
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Quarterly

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: 08/13/2021
Date Data Arrived at EDR: 08/13/2021
Date Made Active in Reports: 10/22/2021
Number of Days to Update: 70
Source: EPA
Telephone: 800-385-6164
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 02/28/2022
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: 09/20/2021
Date Data Arrived at EDR: 09/21/2021
Date Made Active in Reports: 12/08/2021
Number of Days to Update: 78
Source: CAL EPA/Office of Emergency Information
Telephone: 916-323-3400
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

CUPA LIVERMORE-PLEASANTON: CUPA Facility Listing
list of facilities associated with the various CUPA programs in Livermore-Pleasanton

Date of Government Version: 05/01/2019
Date Data Arrived at EDR: 05/14/2019
Date Made Active in Reports: 07/17/2019
Number of Days to Update: 64
Source: Livermore-Pleasanton Fire Department
Telephone: 925-454-2361
Last EDR Contact: 11/19/2021
Next Scheduled EDR Contact: 02/21/2022
Data Release Frequency: Varies

DRYCLEAN AVAQMD: Antelope Valley Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the Antelope Valley Air Quality Management District.

Date of Government Version: 08/24/2021
Date Data Arrived at EDR: 08/25/2021
Date Made Active in Reports: 11/17/2021
Number of Days to Update: 84

Source: Antelope Valley Air Quality Management District
Telephone: 661-723-8070
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Varies

DRYCLEAN SOUTH COAST: South Coast Air Quality Management District Drycleaner Listing
A listing of dry cleaners in the South Coast Air Quality Management District

Date of Government Version: 08/18/2021
Date Data Arrived at EDR: 08/23/2021
Date Made Active in Reports: 11/12/2021
Number of Days to Update: 81

Source: South Coast Air Quality Management District
Telephone: 909-396-3211
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

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: 08/27/2021
Date Data Arrived at EDR: 09/01/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 79

Source: Department of Toxic Substance Control
Telephone: 916-327-4498
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 03/14/2022
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: 12/31/2019
Date Data Arrived at EDR: 06/10/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 78

Source: California Air Resources Board
Telephone: 916-322-2990
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 03/28/2022
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: 04/16/2021
Date Data Arrived at EDR: 04/20/2021
Date Made Active in Reports: 07/07/2021
Number of Days to Update: 78

Source: State Water Resoruces Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/04/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

Financial Assurance 1: Financial Assurance Information Listing
Financial Assurance information

Date of Government Version: 10/05/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Department of Toxic Substances Control
Telephone: 916-255-3628
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/31/2022
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: 08/13/2021
Date Data Arrived at EDR: 08/13/2021
Date Made Active in Reports: 11/05/2021
Number of Days to Update: 84

Source: California Integrated Waste Management Board
Telephone: 916-341-6066
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 02/21/2022
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: 12/31/2019
Date Data Arrived at EDR: 04/15/2020
Date Made Active in Reports: 07/02/2020
Number of Days to Update: 78

Source: California Environmental Protection Agency
Telephone: 916-255-1136
Last EDR Contact: 10/08/2021
Next Scheduled EDR Contact: 01/17/2022
Data Release Frequency: Annually

ICE: ICE

Contains data pertaining to the Permitted Facilities with Inspections / Enforcements sites tracked in Envirostor.

Date of Government Version: 08/13/2021
Date Data Arrived at EDR: 08/13/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 87

Source: Department of Toxic Subsances Control
Telephone: 877-786-9427
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 02/28/2022
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: 08/13/2021
Date Data Arrived at EDR: 08/13/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 87

Source: Department of Toxic Substances Control
Telephone: 916-323-3400
Last EDR Contact: 11/15/2021
Next Scheduled EDR Contact: 02/28/2022
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: 10/04/2021
Date Data Arrived at EDR: 10/05/2021
Date Made Active in Reports: 12/22/2021
Number of Days to Update: 78

Source: Department of Toxic Substances Control
Telephone: 916-440-7145
Last EDR Contact: 01/04/2022
Next Scheduled EDR Contact: 04/18/2022
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: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: Department of Conservation
Telephone: 916-322-1080
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
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: 08/05/2021
Date Data Arrived at EDR: 08/31/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 80
Source: Department of Public Health
Telephone: 916-558-1784
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Varies

NPDES: NPDES Permits Listing
A listing of NPDES permits, including stormwater.

Date of Government Version: 05/10/2021
Date Data Arrived at EDR: 05/11/2021
Date Made Active in Reports: 07/27/2021
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-9379
Last EDR Contact: 11/09/2021
Next Scheduled EDR Contact: 02/21/2022
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: 08/30/2021
Date Data Arrived at EDR: 08/31/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 80
Source: Department of Pesticide Regulation
Telephone: 916-445-4038
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

PROC: Certified Processors Database
A listing of certified processors.

Date of Government Version: 06/04/2021
Date Data Arrived at EDR: 06/04/2021
Date Made Active in Reports: 08/27/2021
Number of Days to Update: 84
Source: Department of Conservation
Telephone: 916-323-3836
Last EDR Contact: 11/29/2021
Next Scheduled EDR Contact: 03/21/2022
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: 03/12/2021
Date Data Arrived at EDR: 03/16/2021
Date Made Active in Reports: 06/01/2021
Number of Days to Update: 77
Source: State Water Resources Control Board
Telephone: 916-445-3846
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
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: 06/03/2021
Date Data Arrived at EDR: 06/03/2021
Date Made Active in Reports: 08/25/2021
Number of Days to Update: 83
Source: Deaprtment of Conservation
Telephone: 916-445-2408
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

UIC GEO: Underground Injection Control Sites (GEOTRACKER)
Underground control injection sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resource Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
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 boards review found that more than one-third of the region's active disposal pits are operating without permission.

Date of Government Version: 02/11/2021
Date Data Arrived at EDR: 07/01/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 90
Source: RWQCB, Central Valley Region
Telephone: 559-445-5577
Last EDR Contact: 10/08/2021
Next Scheduled EDR Contact: 01/17/2022
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: 11/15/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: No Update Planned

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: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: No Update Planned

MILITARY PRIV SITES: Military Privatized Sites (GEOTRACKER)
Military privatized sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

PROJECT: Project Sites (GEOTRACKER)
Projects sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

WDR: Waste Discharge Requirements Listing

In general, the Waste Discharge Requirements (WDRs) Program (sometimes also referred to as the "Non Chapter 15 (Non 15) Program") regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. Exemptions from Title 27 may be granted for nine categories of discharges (e.g., sewage, wastewater, etc.) that meet, and continue to meet, the preconditions listed for each specific exemption. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/08/2021
Date Made Active in Reports: 12/01/2021
Number of Days to Update: 84
Source: State Water Resources Control Board
Telephone: 916-341-5810
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Quarterly

CIWQS: California Integrated Water Quality System

The California Integrated Water Quality System (CIWQS) is a computer system used by the State and Regional Water Quality Control Boards to track information about places of environmental interest, manage permits and other orders, track inspections, and manage violations and enforcement activities.

Date of Government Version: 08/30/2021
Date Data Arrived at EDR: 08/31/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 80
Source: State Water Resources Control Board
Telephone: 866-794-4977
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Varies

CERS: CalEPA Regulated Site Portal Data

The CalEPA Regulated Site Portal database combines data about environmentally regulated sites and facilities in California into a single database. It combines data from a variety of state and federal databases, and provides an overview of regulated activities across the spectrum of environmental programs for any given location in California. These activities include hazardous materials and waste, state and federal cleanups, impacted ground and surface waters, and toxic materials

Date of Government Version: 07/15/2021
Date Data Arrived at EDR: 07/15/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 83
Source: California Environmental Protection Agency
Telephone: 916-323-2514
Last EDR Contact: 10/19/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

NON-CASE INFO: Non-Case Information Sites (GEOTRACKER)

Non-Case Information sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

OTHER OIL GAS: Other Oil & Gas Projects Sites (GEOTRACKER)

Other Oil & Gas Projects sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

PROD WATER PONDS: Produced Water Ponds Sites (GEOTRACKER)
Produced water ponds sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

SAMPLING POINT: Sampling Point ? Public Sites (GEOTRACKER)
Sampling point - public sites

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

WELL STIM PROJ: Well Stimulation Project (GEOTRACKER)
Includes areas of groundwater monitoring plans, a depiction of the monitoring network, and the facilities, boundaries, and subsurface characteristics of the oilfield and the features (oil and gas wells, produced water ponds, UIC wells, water supply wells, etc?) being monitored

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/07/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 83
Source: State Water Resources Control Board
Telephone: 866-480-1028
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Varies

PCS INACTIVE: Listing of Inactive PCS Permits
An inactive permit is a facility that has shut down or is no longer discharging.

Date of Government Version: 11/05/2014
Date Data Arrived at EDR: 01/06/2015
Date Made Active in Reports: 05/06/2015
Number of Days to Update: 120
Source: EPA
Telephone: 202-564-2496
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Semi-Annually

PCS: Permit Compliance System
PCS is a computerized management information system that contains data on National Pollutant Discharge Elimination System (NPDES) permit holding facilities. PCS tracks the permit, compliance, and enforcement status of NPDES facilities.

Date of Government Version: 07/14/2011
Date Data Arrived at EDR: 08/05/2011
Date Made Active in Reports: 09/29/2011
Number of Days to Update: 55
Source: EPA, Office of Water
Telephone: 202-564-2496
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Semi-Annually

HWTS: Hazardous Waste Tracking System
DTSC maintains the Hazardous Waste Tracking System that stores ID number information since the early 1980s and manifest data since 1993. The system collects both manifest copies from the generator and destination facility.

Date of Government Version: 07/13/2021
Date Data Arrived at EDR: 07/14/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 84
Source: Department of Toxic Substances Control
Telephone: 916-324-2444
Last EDR Contact: 01/03/2022
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Varies

MINES MRDS: Mineral Resources Data System
Mineral Resources Data System

Date of Government Version: 04/06/2018
Date Data Arrived at EDR: 10/21/2019
Date Made Active in Reports: 10/24/2019
Number of Days to Update: 3

Source: USGS
Telephone: 703-648-6533
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Varies

PCS ENF: Enforcement data
No description is available for this data

Date of Government Version: 12/31/2014
Date Data Arrived at EDR: 02/05/2015
Date Made Active in Reports: 03/06/2015
Number of Days to Update: 29

Source: EPA
Telephone: 202-564-2497
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Varies

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:

CS ALAMEDA: 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: 01/09/2019
Date Data Arrived at EDR: 01/11/2019
Date Made Active in Reports: 03/05/2019
Number of Days to Update: 53

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 12/28/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Semi-Annually

UST ALAMEDA: Underground Tanks

Underground storage tank sites located in Alameda county.

Date of Government Version: 09/30/2021
Date Data Arrived at EDR: 10/01/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 75

Source: Alameda County Environmental Health Services
Telephone: 510-567-6700
Last EDR Contact: 12/28/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Semi-Annually

AMADOR COUNTY:

CUPA AMADOR: CUPA Facility List
Cupa Facility List

Date of Government Version: 08/05/2021
Date Data Arrived at EDR: 08/06/2021
Date Made Active in Reports: 09/17/2021
Number of Days to Update: 42

Source: Amador County Environmental Health
Telephone: 209-223-6439
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

BUTTE COUNTY:

CUPA BUTTE: 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: 12/28/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: No Update Planned

CALVERAS COUNTY:

CUPA CALVERAS: CUPA Facility Listing
Cupa Facility Listing

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Calveras County Environmental Health
Telephone: 209-754-6399
Last EDR Contact: 12/28/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

COLUSA COUNTY:

CUPA COLUSA: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/06/2020
Date Data Arrived at EDR: 04/23/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 78

Source: Health & Human Services
Telephone: 530-458-0396
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Semi-Annually

CONTRA COSTA COUNTY:

SL CONTRA COSTA: Site List
List includes sites from the underground tank, hazardous waste generator and business plan/2185 programs.

Date of Government Version: 07/20/2021
Date Data Arrived at EDR: 07/20/2021
Date Made Active in Reports: 10/11/2021
Number of Days to Update: 83

Source: Contra Costa Health Services Department
Telephone: 925-646-2286
Last EDR Contact: 10/22/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Semi-Annually

DEL NORTE COUNTY:

CUPA DEL NORTE: CUPA Facility List
Cupa Facility list

Date of Government Version: 06/29/2021
Date Data Arrived at EDR: 07/23/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 77

Source: Del Norte County Environmental Health Division
Telephone: 707-465-0426
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Varies

EL DORADO COUNTY:

CUPA EL DORADO: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/30/2021
Date Data Arrived at EDR: 08/03/2021
Date Made Active in Reports: 10/26/2021
Number of Days to Update: 84

Source: El Dorado County Environmental Management Department
Telephone: 530-621-6623
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Varies

FRESNO COUNTY:

CUPA FRESNO: 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: 04/09/2021
Date Data Arrived at EDR: 06/23/2021
Date Made Active in Reports: 09/17/2021
Number of Days to Update: 86

Source: Dept. of Community Health
Telephone: 559-445-3271
Last EDR Contact: 12/21/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Semi-Annually

GLENN COUNTY:

CUPA GLENN: 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: 07/13/2021
Next Scheduled EDR Contact: 11/01/2021
Data Release Frequency: No Update Planned

HUMBOLDT COUNTY:

CUPA HUMBOLDT: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/12/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Humboldt County Environmental Health
Telephone: N/A
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Semi-Annually

IMPERIAL COUNTY:

CUPA IMPERIAL: CUPA Facility List
Cupa facility list.

Date of Government Version: 07/13/2021
Date Data Arrived at EDR: 07/15/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 83

Source: San Diego Border Field Office
Telephone: 760-339-2777
Last EDR Contact: 10/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

INYO COUNTY:

CUPA INYO: CUPA Facility List
Cupa facility list.

Date of Government Version: 04/02/2018
Date Data Arrived at EDR: 04/03/2018
Date Made Active in Reports: 06/14/2018
Number of Days to Update: 72

Source: Inyo County Environmental Health Services
Telephone: 760-878-0238
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

KERN COUNTY:

CUPA KERN: CUPA Facility List
A listing of sites included in the Kern County Hazardous Material Business Plan.

Date of Government Version: 07/06/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 10/07/2021
Number of Days to Update: 56

Source: Kern County Public Health
Telephone: 661-321-3000
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

UST KERN: Underground Storage Tank Sites & Tank Listing
Kern County Sites and Tanks Listing.

Date of Government Version: 07/06/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 08/18/2021
Number of Days to Update: 6

Source: Kern County Environment Health Services Department
Telephone: 661-862-8700
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

KINGS COUNTY:

CUPA KINGS: 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: 12/03/2020
Date Data Arrived at EDR: 01/26/2021
Date Made Active in Reports: 04/14/2021
Number of Days to Update: 78

Source: Kings County Department of Public Health
Telephone: 559-584-1411
Last EDR Contact: 12/22/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

LAKE COUNTY:

CUPA LAKE: CUPA Facility List
Cupa facility list

Date of Government Version: 07/27/2021
Date Data Arrived at EDR: 07/28/2021
Date Made Active in Reports: 10/21/2021
Number of Days to Update: 85

Source: Lake County Environmental Health
Telephone: 707-263-1164
Last EDR Contact: 10/06/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Varies

LASSEN COUNTY:

CUPA LASSEN: CUPA Facility List
Cupa facility list

Date of Government Version: 07/31/2020
Date Data Arrived at EDR: 08/21/2020
Date Made Active in Reports: 11/09/2020
Number of Days to Update: 80

Source: Lassen County Environmental Health
Telephone: 530-251-8528
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

LOS ANGELES COUNTY:

AOCONCERN: Key Areas of Concerns in Los Angeles County
San Gabriel Valley areas where VOC contamination is at or above the MCL as designated by region 9 EPA office. Date of Government Version: 3/30/2009 Exide Site area is a cleanup plan of lead-impacted soil surrounding the former Exide Facility as designated by the DTSC. Date of Government Version: 7/17/2017

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: N/A
Telephone: N/A
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
Data Release Frequency: No Update Planned

HMS LOS ANGELES: HMS: Street Number List
Industrial Waste and Underground Storage Tank Sites.

Date of Government Version: 07/08/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82

Source: Department of Public Works
Telephone: 626-458-3517
Last EDR Contact: 12/28/2021
Next Scheduled EDR Contact: 04/18/2022
Data Release Frequency: Semi-Annually

LF LOS ANGELES: List of Solid Waste Facilities
Solid Waste Facilities in Los Angeles County.

Date of Government Version: 10/08/2021
Date Data Arrived at EDR: 10/08/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 82

Source: La County Department of Public Works
Telephone: 818-458-5185
Last EDR Contact: 10/08/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Varies

LF LOS ANGELES CITY: City of Los Angeles Landfills
Landfills owned and maintained by the City of Los Angeles.

Date of Government Version: 01/01/2021
Date Data Arrived at EDR: 02/18/2021
Date Made Active in Reports: 05/10/2021
Number of Days to Update: 81

Source: Engineering & Construction Division
Telephone: 213-473-7869
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Varies

LOS ANGELES AST: Active & Inactive AST Inventory
A listing of active & inactive above ground petroleum storage tank site locations, located in the City of Los Angeles.

Date of Government Version: 06/01/2019
Date Data Arrived at EDR: 06/25/2019
Date Made Active in Reports: 08/22/2019
Number of Days to Update: 58
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/16/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

LOS ANGELES CO LF METHANE: Methane Producing Landfills
This data was created on April 30, 2012 to represent known disposal sites in Los Angeles County that may produce and emanate methane gas. The shapefile contains disposal sites within Los Angeles County that once accepted degradable refuse material. Information used to create this data was extracted from a landfill survey performed by County Engineers (Major Waste System Map, 1973) as well as historical records from CalRecycle, Regional Water Quality Control Board, and Los Angeles County Department of Public Health

Date of Government Version: 10/12/2021
Date Data Arrived at EDR: 10/13/2021
Date Made Active in Reports: 01/04/2022
Number of Days to Update: 83
Source: Los Angeles County Department of Public Works
Telephone: 626-458-6973
Last EDR Contact: 10/08/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: No Update Planned

LOS ANGELES HM: Active & Inactive Hazardous Materials Inventory
A listing of active & inactive hazardous materials facility locations, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 06/28/2021
Number of Days to Update: 11
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

LOS ANGELES UST: Active & Inactive UST Inventory
A listing of active & inactive underground storage tank site locations and underground storage tank historical sites, located in the City of Los Angeles.

Date of Government Version: 04/19/2021
Date Data Arrived at EDR: 06/17/2021
Date Made Active in Reports: 09/14/2021
Number of Days to Update: 89
Source: Los Angeles Fire Department
Telephone: 213-978-3800
Last EDR Contact: 12/17/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

SITE MIT LOS ANGELES: Site Mitigation List
Industrial sites that have had some sort of spill or complaint.

Date of Government Version: 05/26/2021
Date Data Arrived at EDR: 07/09/2021
Date Made Active in Reports: 09/29/2021
Number of Days to Update: 82
Source: Community Health Services
Telephone: 323-890-7806
Last EDR Contact: 10/15/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Annually

UST EL SEGUNDO: 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: 10/06/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: No Update Planned

UST LONG BEACH: City of Long Beach Underground Storage Tank
Underground storage tank sites located in the city of Long Beach.

Date of Government Version: 04/22/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/27/2019
Number of Days to Update: 65

Source: City of Long Beach Fire Department
Telephone: 562-570-2563
Last EDR Contact: 10/14/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

UST TORRANCE: City of Torrance Underground Storage Tank
Underground storage tank sites located in the city of Torrance.

Date of Government Version: 02/02/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: City of Torrance Fire Department
Telephone: 310-618-2973
Last EDR Contact: 10/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Semi-Annually

MADERA COUNTY:

CUPA MADERA: 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: 08/10/2020
Date Data Arrived at EDR: 08/12/2020
Date Made Active in Reports: 10/23/2020
Number of Days to Update: 72

Source: Madera County Environmental Health
Telephone: 559-675-7823
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

MARIN COUNTY:

UST MARIN: Underground Storage Tank Sites
Currently permitted USTs in Marin County.

Date of Government Version: 09/26/2018
Date Data Arrived at EDR: 10/04/2018
Date Made Active in Reports: 11/02/2018
Number of Days to Update: 29

Source: Public Works Department Waste Management
Telephone: 415-473-6647
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Semi-Annually

MENDOCINO COUNTY:

UST MENDOCINO: Mendocino County UST Database
A listing of underground storage tank locations in Mendocino County.

Date of Government Version: 09/22/2021
Date Data Arrived at EDR: 11/18/2021
Date Made Active in Reports: 11/22/2021
Number of Days to Update: 4

Source: Department of Public Health
Telephone: 707-463-4466
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: Annually

MERCED COUNTY:

CUPA MERCED: CUPA Facility List
CUPA facility list.

Date of Government Version: 08/11/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: Merced County Environmental Health
Telephone: 209-381-1094
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

MONO COUNTY:

CUPA MONO: CUPA Facility List
CUPA Facility List

Date of Government Version: 02/22/2021
Date Data Arrived at EDR: 03/02/2021
Date Made Active in Reports: 05/19/2021
Number of Days to Update: 78

Source: Mono County Health Department
Telephone: 760-932-5580
Last EDR Contact: 12/28/2021
Next Scheduled EDR Contact: 06/06/3021
Data Release Frequency: Varies

MONTEREY COUNTY:

CUPA MONTEREY: CUPA Facility Listing
CUPA Program listing from the Environmental Health Division.

Date of Government Version: 10/04/2021
Date Data Arrived at EDR: 10/06/2021
Date Made Active in Reports: 12/29/2021
Number of Days to Update: 84

Source: Monterey County Health Department
Telephone: 831-796-1297
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Varies

NAPA COUNTY:

LUST NAPA: 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: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: No Update Planned

UST NAPA: Closed and Operating Underground Storage Tank Sites
Underground storage tank sites located in Napa county.

Date of Government Version: 09/05/2019
Date Data Arrived at EDR: 09/09/2019
Date Made Active in Reports: 10/31/2019
Number of Days to Update: 52

Source: Napa County Department of Environmental Management
Telephone: 707-253-4269
Last EDR Contact: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: No Update Planned

NEVADA COUNTY:

CUPA NEVADA: CUPA Facility List
CUPA facility list.

Date of Government Version: 07/28/2021
Date Data Arrived at EDR: 07/28/2021
Date Made Active in Reports: 10/21/2021
Number of Days to Update: 85

Source: Community Development Agency
Telephone: 530-265-1467
Last EDR Contact: 10/22/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Varies

ORANGE COUNTY:

IND_SITE ORANGE: List of Industrial Site Cleanups
Petroleum and non-petroleum spills.

Date of Government Version: 07/09/2021
Date Data Arrived at EDR: 08/03/2021
Date Made Active in Reports: 10/26/2021
Number of Days to Update: 84

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Annually

LUST ORANGE: List of Underground Storage Tank Cleanups
Orange County Underground Storage Tank Cleanups (LUST).

Date of Government Version: 07/09/2021
Date Data Arrived at EDR: 08/03/2021
Date Made Active in Reports: 10/26/2021
Number of Days to Update: 84

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

UST ORANGE: List of Underground Storage Tank Facilities
Orange County Underground Storage Tank Facilities (UST).

Date of Government Version: 07/09/2021
Date Data Arrived at EDR: 07/29/2021
Date Made Active in Reports: 10/19/2021
Number of Days to Update: 82

Source: Health Care Agency
Telephone: 714-834-3446
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

PLACER COUNTY:

MS PLACER: Master List of Facilities
List includes aboveground tanks, underground tanks and cleanup sites.

Date of Government Version: 09/07/2021
Date Data Arrived at EDR: 09/09/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 81

Source: Placer County Health and Human Services
Telephone: 530-745-2363
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Semi-Annually

PLUMAS COUNTY:

CUPA PLUMAS: CUPA Facility List
Plumas County CUPA Program facilities.

Date of Government Version: 03/31/2019
Date Data Arrived at EDR: 04/23/2019
Date Made Active in Reports: 06/26/2019
Number of Days to Update: 64

Source: Plumas County Environmental Health
Telephone: 530-283-6355
Last EDR Contact: 10/14/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

RIVERSIDE COUNTY:

LUST RIVERSIDE: Listing of Underground Tank Cleanup Sites
Riverside County Underground Storage Tank Cleanup Sites (LUST).

Date of Government Version: 09/29/2021
Date Data Arrived at EDR: 09/30/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 75
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
Data Release Frequency: Quarterly

UST RIVERSIDE: Underground Storage Tank Tank List
Underground storage tank sites located in Riverside county.

Date of Government Version: 09/29/2021
Date Data Arrived at EDR: 09/30/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 76
Source: Department of Environmental Health
Telephone: 951-358-5055
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 03/28/2022
Data Release Frequency: Quarterly

SACRAMENTO COUNTY:

CS SACRAMENTO: Toxic Site Clean-Up List
List of sites where unauthorized releases of potentially hazardous materials have occurred.

Date of Government Version: 06/18/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/14/2021
Number of Days to Update: 77
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Quarterly

ML SACRAMENTO: 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: 08/02/2021
Date Data Arrived at EDR: 08/04/2021
Date Made Active in Reports: 11/02/2021
Number of Days to Update: 90
Source: Sacramento County Environmental Management
Telephone: 916-875-8406
Last EDR Contact: 12/29/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Quarterly

SAN BENITO COUNTY:

CUPA SAN BENITO: CUPA Facility List
Cupa facility list

Date of Government Version: 07/27/2021
Date Data Arrived at EDR: 07/28/2021
Date Made Active in Reports: 10/21/2021
Number of Days to Update: 85
Source: San Benito County Environmental Health
Telephone: N/A
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

SAN BERNARDINO COUNTY:

PERMITS SAN BERNARDINO: 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: 08/11/2021
Date Data Arrived at EDR: 08/12/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 88

Source: San Bernardino County Fire Department Hazardous Materials Division
Telephone: 909-387-3041
Last EDR Contact: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

SAN DIEGO COUNTY:

HMMD SAN DIEGO: 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: 08/30/2021
Date Data Arrived at EDR: 08/31/2021
Date Made Active in Reports: 11/19/2021
Number of Days to Update: 80

Source: Hazardous Materials Management Division
Telephone: 619-338-2268
Last EDR Contact: 11/30/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

LF SAN DIEGO: Solid Waste Facilities

San Diego County Solid Waste Facilities.

Date of Government Version: 10/01/2020
Date Data Arrived at EDR: 11/23/2020
Date Made Active in Reports: 02/08/2021
Number of Days to Update: 77

Source: Department of Health Services
Telephone: 619-338-2209
Last EDR Contact: 12/08/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

SAN DIEGO CO LOP: Local Oversight Program Listing

A listing of all LOP release sites that are or were under the County of San Diego's jurisdiction. Included are closed or transferred cases, open cases, and cases that did not have a case type indicated. The cases without a case type are mostly complaints; however, some of them could be LOP cases.

Date of Government Version: 07/14/2020
Date Data Arrived at EDR: 07/16/2020
Date Made Active in Reports: 09/29/2020
Number of Days to Update: 75

Source: Department of Environmental Health
Telephone: 858-505-6874
Last EDR Contact: 10/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

SAN DIEGO CO SAM: 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: 11/23/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: No Update Planned

SAN FRANCISCO COUNTY:

CUPA SAN FRANCISCO CO: CUPA Facility Listing

Cupa facilities

Date of Government Version: 08/05/2021
Date Data Arrived at EDR: 08/05/2021
Date Made Active in Reports: 10/29/2021
Number of Days to Update: 85

Source: San Francisco County Department of Environmental Health
Telephone: 415-252-3896
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

LUST SAN FRANCISCO: 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: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: No Update Planned

UST SAN FRANCISCO: Underground Storage Tank Information
Underground storage tank sites located in San Francisco county.

Date of Government Version: 08/05/2021
Date Data Arrived at EDR: 08/05/2021
Date Made Active in Reports: 10/29/2021
Number of Days to Update: 85

Source: Department of Public Health
Telephone: 415-252-3920
Last EDR Contact: 10/31/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Quarterly

SAN JOAQUIN COUNTY:

UST SAN JOAQUIN: San Joaquin Co. UST
A listing of underground storage tank locations in San Joaquin county.

Date of Government Version: 06/22/2018
Date Data Arrived at EDR: 06/26/2018
Date Made Active in Reports: 07/11/2018
Number of Days to Update: 15

Source: Environmental Health Department
Telephone: N/A
Last EDR Contact: 09/09/2021
Next Scheduled EDR Contact: 12/27/2021
Data Release Frequency: Semi-Annually

SAN LUIS OBISPO COUNTY:

CUPA SAN LUIS OBISPO: CUPA Facility List
Cupa Facility List.

Date of Government Version: 08/10/2021
Date Data Arrived at EDR: 08/11/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 89

Source: San Luis Obispo County Public Health Department
Telephone: 805-781-5596
Last EDR Contact: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

SAN MATEO COUNTY:

BI SAN MATEO: Business Inventory
List includes Hazardous Materials Business Plan, hazardous waste generators, and underground storage tanks.

Date of Government Version: 02/20/2020
Date Data Arrived at EDR: 02/20/2020
Date Made Active in Reports: 04/24/2020
Number of Days to Update: 64

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/10/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Annually

LUST SAN MATEO: Fuel Leak List
A listing of leaking underground storage tank sites located in San Mateo county.

Date of Government Version: 03/29/2019
Date Data Arrived at EDR: 03/29/2019
Date Made Active in Reports: 05/29/2019
Number of Days to Update: 61

Source: San Mateo County Environmental Health Services Division
Telephone: 650-363-1921
Last EDR Contact: 12/02/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Semi-Annually

SANTA BARBARA COUNTY:

CUPA SANTA BARBARA: 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: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: No Update Planned

SANTA CLARA COUNTY:

CUPA SANTA CLARA: Cupa Facility List
Cupa facility list

Date of Government Version: 08/04/2021
Date Data Arrived at EDR: 08/05/2021
Date Made Active in Reports: 10/29/2021
Number of Days to Update: 85

Source: Department of Environmental Health
Telephone: 408-918-1973
Last EDR Contact: 11/18/2021
Next Scheduled EDR Contact: 02/27/2022
Data Release Frequency: Varies

HIST LUST SANTA CLARA: 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

LUST SANTA CLARA: 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: 11/16/2021
Next Scheduled EDR Contact: 03/07/2022
Data Release Frequency: No Update Planned

SAN JOSE HAZMAT: Hazardous Material Facilities
Hazardous material facilities, including underground storage tank sites.

Date of Government Version: 11/03/2020
Date Data Arrived at EDR: 11/05/2020
Date Made Active in Reports: 01/26/2021
Number of Days to Update: 82

Source: City of San Jose Fire Department
Telephone: 408-535-7694
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Annually

SANTA CRUZ COUNTY:

CUPA SANTA CRUZ: 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: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

SHASTA COUNTY:

CUPA SHASTA: 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: 11/11/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Varies

SOLANO COUNTY:

LUST SOLANO: Leaking Underground Storage Tanks
A listing of leaking underground storage tank sites located in Solano county.

Date of Government Version: 06/04/2019
Date Data Arrived at EDR: 06/06/2019
Date Made Active in Reports: 08/13/2019
Number of Days to Update: 68

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

UST SOLANO: Underground Storage Tanks
Underground storage tank sites located in Solano county.

Date of Government Version: 09/15/2021
Date Data Arrived at EDR: 09/16/2021
Date Made Active in Reports: 12/09/2021
Number of Days to Update: 84

Source: Solano County Department of Environmental Management
Telephone: 707-784-6770
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Quarterly

SONOMA COUNTY:

CUPA SONOMA: Cupa Facility List
Cupa Facility list

Date of Government Version: 07/02/2021
Date Data Arrived at EDR: 07/06/2021
Date Made Active in Reports: 07/14/2021
Number of Days to Update: 8

Source: County of Sonoma Fire & Emergency Services Department
Telephone: 707-565-1174
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Varies

LUST SONOMA: Leaking Underground Storage Tank Sites
A listing of leaking underground storage tank sites located in Sonoma county.

Date of Government Version: 06/30/2021
Date Data Arrived at EDR: 06/30/2021
Date Made Active in Reports: 09/24/2021
Number of Days to Update: 86

Source: Department of Health Services
Telephone: 707-565-6565
Last EDR Contact: 12/14/2021
Next Scheduled EDR Contact: 04/04/2022
Data Release Frequency: Quarterly

STANISLAUS COUNTY:

CUPA STANISLAUS: CUPA Facility List
Cupa facility list

Date of Government Version: 05/14/2021
Date Data Arrived at EDR: 05/17/2021
Date Made Active in Reports: 08/03/2021
Number of Days to Update: 78

Source: Stanislaus County Department of Ennvironmental Protection
Telephone: 209-525-6751
Last EDR Contact: 10/06/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Varies

SUTTER COUNTY:

UST SUTTER: Underground Storage Tanks
Underground storage tank sites located in Sutter county.

Date of Government Version: 08/23/2021
Date Data Arrived at EDR: 08/25/2021
Date Made Active in Reports: 11/17/2021
Number of Days to Update: 84

Source: Sutter County Environmental Health Services
Telephone: 530-822-7500
Last EDR Contact: 11/23/2021
Next Scheduled EDR Contact: 03/14/2022
Data Release Frequency: Semi-Annually

TEHAMA COUNTY:

CUPA TEHAMA: CUPA Facility List
Cupa facilities

Date of Government Version: 01/13/2021
Date Data Arrived at EDR: 01/14/2021
Date Made Active in Reports: 04/06/2021
Number of Days to Update: 82

Source: Tehama County Department of Environmental Health
Telephone: 530-527-8020
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

TRINITY COUNTY:

CUPA TRINITY: CUPA Facility List
Cupa facility list

Date of Government Version: 07/14/2021
Date Data Arrived at EDR: 07/15/2021
Date Made Active in Reports: 10/06/2021
Number of Days to Update: 83

Source: Department of Toxic Substances Control
Telephone: 760-352-0381
Last EDR Contact: 10/15/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

TULARE COUNTY:

CUPA TULARE: CUPA Facility List
Cupa program facilities

Date of Government Version: 04/26/2021
Date Data Arrived at EDR: 04/28/2021
Date Made Active in Reports: 07/13/2021
Number of Days to Update: 76

Source: Tulare County Environmental Health Services Division
Telephone: 559-624-7400
Last EDR Contact: 11/01/2021
Next Scheduled EDR Contact: 02/14/2022
Data Release Frequency: Varies

TUOLUMNE COUNTY:

CUPA TUOLUMNE: CUPA Facility List
Cupa facility list

Date of Government Version: 04/23/2018
Date Data Arrived at EDR: 04/25/2018
Date Made Active in Reports: 06/25/2018
Number of Days to Update: 61

Source: Divison of Environmental Health
Telephone: 209-533-5633
Last EDR Contact: 10/14/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Varies

VENTURA COUNTY:

BWT VENTURA: 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: 05/26/2021
Date Data Arrived at EDR: 07/19/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 81

Source: Ventura County Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 10/18/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Quarterly

LF VENTURA: 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: 12/20/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: No Update Planned

LUST VENTURA: 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: 11/05/2021
Next Scheduled EDR Contact: 02/21/2022
Data Release Frequency: No Update Planned

MED WASTE VENTURA: 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: 05/26/2021
Date Data Arrived at EDR: 07/19/2021
Date Made Active in Reports: 10/07/2021
Number of Days to Update: 80

Source: Ventura County Resource Management Agency
Telephone: 805-654-2813
Last EDR Contact: 10/18/2021
Next Scheduled EDR Contact: 01/31/2022
Data Release Frequency: Quarterly

UST VENTURA: Underground Tank Closed Sites List
Ventura County Operating Underground Storage Tank Sites (UST)/Underground Tank Closed Sites List.

Date of Government Version: 07/26/2021
Date Data Arrived at EDR: 09/08/2021
Date Made Active in Reports: 11/29/2021
Number of Days to Update: 82

Source: Environmental Health Division
Telephone: 805-654-2813
Last EDR Contact: 12/07/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Quarterly

YOLO COUNTY:

UST YOLO: Underground Storage Tank Comprehensive Facility Report
Underground storage tank sites located in Yolo county.

Date of Government Version: 09/23/2021
Date Data Arrived at EDR: 09/28/2021
Date Made Active in Reports: 12/15/2021
Number of Days to Update: 78

Source: Yolo County Department of Health
Telephone: 530-666-8646
Last EDR Contact: 12/20/2021
Next Scheduled EDR Contact: 04/11/2022
Data Release Frequency: Annually

YUBA COUNTY:

CUPA YUBA: CUPA Facility List
CUPA facility listing for Yuba County.

Date of Government Version: 07/20/2021
Date Data Arrived at EDR: 07/20/2021
Date Made Active in Reports: 10/08/2021
Number of Days to Update: 80

Source: Yuba County Environmental Health Department
Telephone: 530-749-7523
Last EDR Contact: 10/22/2021
Next Scheduled EDR Contact: 02/07/2022
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: 07/23/2021
Date Data Arrived at EDR: 08/10/2021
Date Made Active in Reports: 11/08/2021
Number of Days to Update: 90

Source: Department of Energy & Environmental Protection
Telephone: 860-424-3375
Last EDR Contact: 11/12/2021
Next Scheduled EDR Contact: 02/21/2022
Data Release Frequency: No Update Planned

NJ MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 12/31/2018
Date Data Arrived at EDR: 04/10/2019
Date Made Active in Reports: 05/16/2019
Number of Days to Update: 36

Source: Department of Environmental Protection
Telephone: N/A
Last EDR Contact: 10/05/2021
Next Scheduled EDR Contact: 01/17/2022
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: 01/01/2019
Date Data Arrived at EDR: 04/29/2020
Date Made Active in Reports: 07/10/2020
Number of Days to Update: 72

Source: Department of Environmental Conservation
Telephone: 518-402-8651
Last EDR Contact: 10/29/2021
Next Scheduled EDR Contact: 02/07/2022
Data Release Frequency: Quarterly

PA MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 06/30/2018
Date Data Arrived at EDR: 07/19/2019
Date Made Active in Reports: 09/10/2019
Number of Days to Update: 53

Source: Department of Environmental Protection
Telephone: 717-783-8990
Last EDR Contact: 10/07/2021
Next Scheduled EDR Contact: 01/24/2022
Data Release Frequency: Annually

RI MANIFEST: Manifest information
Hazardous waste manifest information

Date of Government Version: 12/31/2019
Date Data Arrived at EDR: 02/11/2021
Date Made Active in Reports: 02/24/2021
Number of Days to Update: 13

Source: Department of Environmental Management
Telephone: 401-222-2797
Last EDR Contact: 11/29/2021
Next Scheduled EDR Contact: 02/28/2022
Data Release Frequency: Annually

WI MANIFEST: Manifest Information
Hazardous waste manifest information.

Date of Government Version: 05/31/2018
Date Data Arrived at EDR: 06/19/2019
Date Made Active in Reports: 09/03/2019
Number of Days to Update: 76

Source: Department of Natural Resources
Telephone: N/A
Last EDR Contact: 12/06/2021
Next Scheduled EDR Contact: 03/21/2022
Data Release Frequency: Annually

Oil/Gas Pipelines
Source: Endeavor Business Media
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 Endeavor Business Media. This information is provided on a best effort basis and Endeavor Business Media does not guarantee its accuracy nor warrant its fitness for any particular purpose. Such information has been reprinted with the permission of Endeavor Business Media.

Electric Power Transmission Line Data
Source: Endeavor Business Media
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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 and Wildlife
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

APN 331-060-018
ETHANAC ROAD/EVANS ROAD
MENIFEE, CA 92585

TARGET PROPERTY COORDINATES

Latitude (North):	33.742037 - 33ˆ 44’ 31.33’’
Longitude (West):	117.196699 - 117ˆ 11’ 48.12’’
Universal Tranverse Mercator:	Zone 11
UTM X (Meters):	481780.1
UTM Y (Meters):	3733378.0
Elevation:	1422 ft. above sea level

USGS TOPOGRAPHIC MAP

Target Property Map:	12015913 ROMOLAND, CA
Version Date:	2018
North Map:	12015907 PERRIS, CA
Version Date:	2018

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 principle 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).

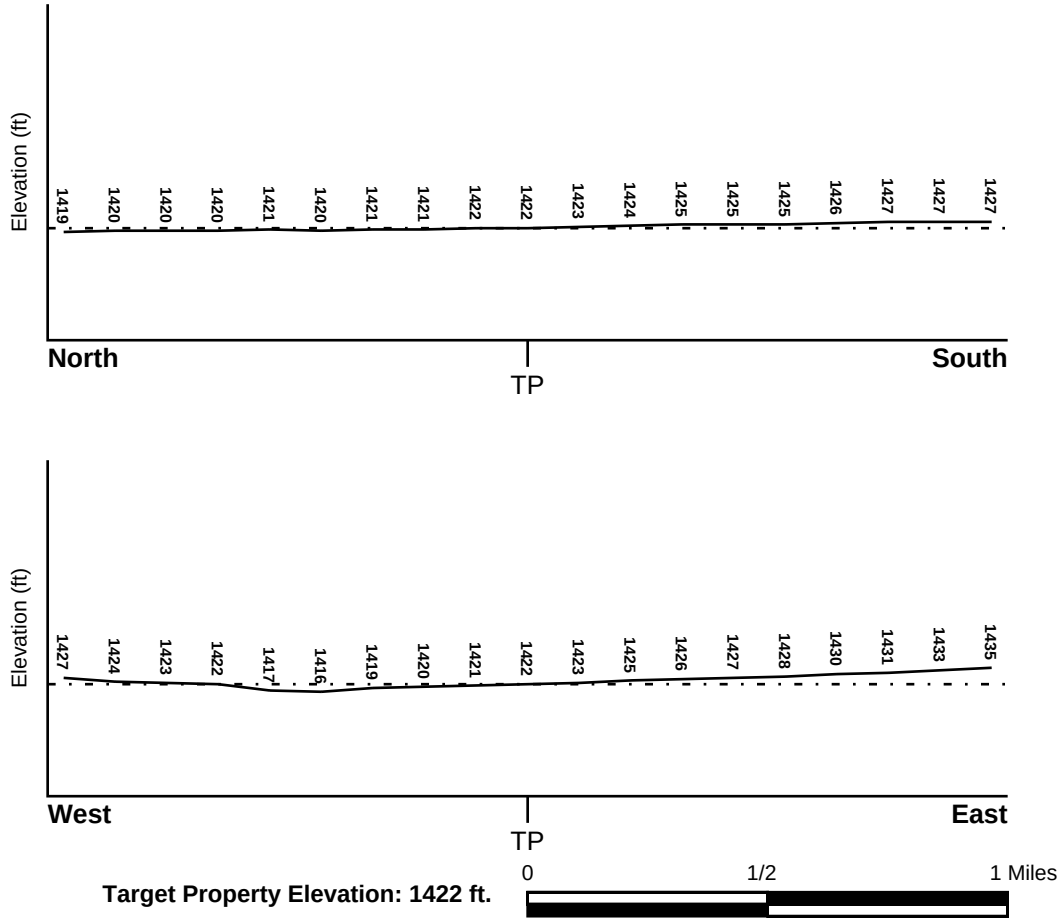
TOPOGRAPHIC INFORMATION

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 WNW

SURROUNDING TOPOGRAPHY: ELEVATION PROFILES



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
06065C2055H	FEMA FIRM Flood data

Additional Panels in search area:	FEMA Source Type
06065C1440H	FEMA FIRM Flood data
06065C1445H	FEMA FIRM Flood data
06065C2060H	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

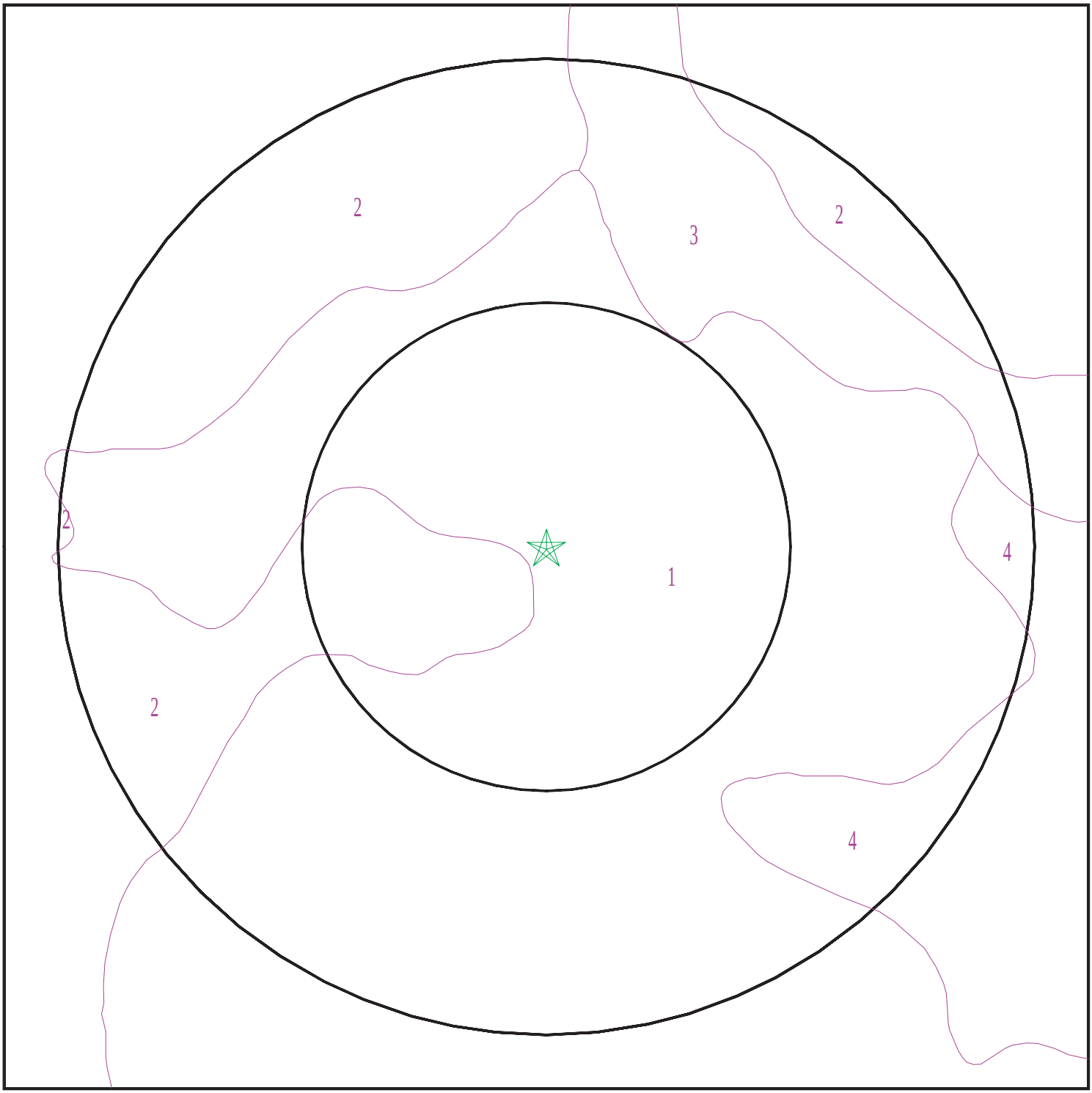
Era:	Mesozoic
System:	Cretaceous
Series:	Cretaceous granitic rocks
Code:	Kg *(decoded above as Era, System & Series)*

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 - 6809919.2s



Target Property
SSURGO Soil
Water

0 1/16 1/8 1/4 Miles

N

SITE NAME:	APN 331-060-018	CLIENT:	LOR Geotechnical Group, Inc.
ADDRESS:	Ethanac Road/Evans Road Menifee CA 92585	CONTACT:	Mathew Hunt
LAT/LONG:	33.742037 / 117.196699	INQUIRY #:	6809919.2s
		DATE:	January 05, 2022 8:15 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: 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.	FINE-GRAINED SOILS, Silts and Clays (liquid limit less than 50%), silt.	Max: 4 Min: 1.4	Max: 8.4 Min: 7.4
2	16 inches	37 inches	sandy clay 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
3	37 inches	50 inches	indurated	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
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: 2

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.	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
2	18 inches	25 inches	clay	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty 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
3	25 inches	37 inches	indurated	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty 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 Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
4	37 inches	61 inches	stratified coarse sandy loam to clay loam	Silt-Clay Materials (more than 35 pct. passing No. 200), Silty 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: 3

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: 8.4 Min: 6.6

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

Soil Layer Information							
	Boundary			Classification		Saturated hydraulic conductivity micro m/sec	Soil Reaction (pH)
Layer	Upper	Lower	Soil Texture Class	AASHTO Group	Unified Soil		
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: 8.4 Min: 6.6
3	42 inches	59 inches	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
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

Soil Map ID: 4

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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

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: 8.4 Min: 6.6
2	9 inches	27 inches	sandy clay 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: 8.4 Min: 6.6
3	27 inches	44 inches	indurated	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: 8.4 Min: 6.6
4	44 inches	57 inches	cemented	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: 8.4 Min: 6.6
5	57 inches	70 inches	loamy coarse sand	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: 8.4 Min: 6.6

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

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

FEDERAL USGS WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
A2	USGS40000137732	1/4 - 1/2 Mile West
B4	USGS40000137659	1/4 - 1/2 Mile SW
D10	USGS40000137694	1/2 - 1 Mile WSW
E13	USGS40000137582	1/2 - 1 Mile South
F14	USGS40000137862	1/2 - 1 Mile NNW
G20	USGS40000137861	1/2 - 1 Mile NNE
H24	USGS40000137824	1/2 - 1 Mile ENE
I28	USGS40000137850	1/2 - 1 Mile NE
L32	USGS40000137891	1/2 - 1 Mile NNE
M36	USGS40000137613	1/2 - 1 Mile SE

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

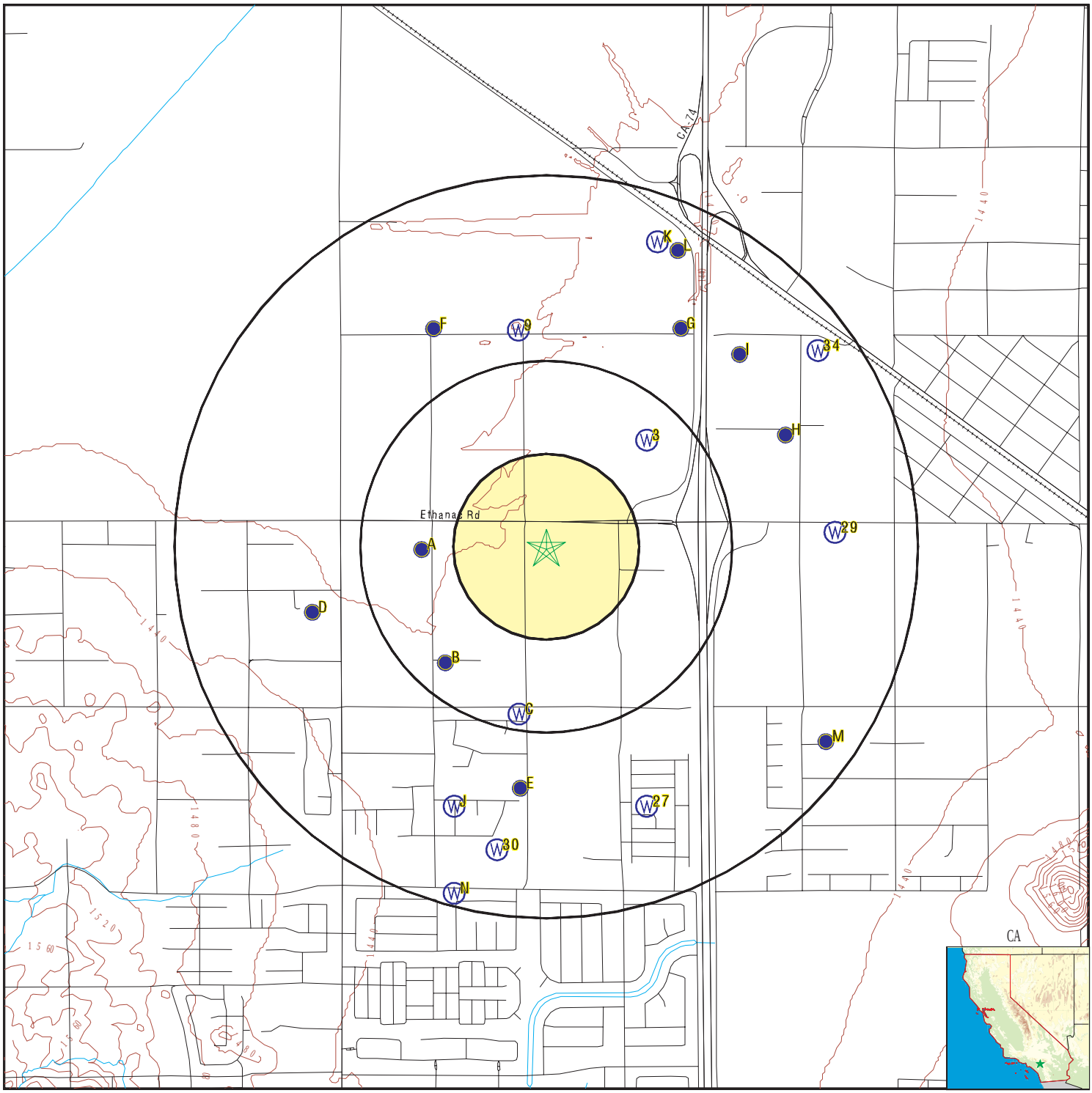
MAP ID	WELL ID	LOCATION FROM TP
A1	CAUSGSN00017156	1/4 - 1/2 Mile West
3	CADWR0000015366	1/4 - 1/2 Mile NE
B5	CAUSGSN00014749	1/4 - 1/2 Mile SW
C6	CADDW0000017526	1/4 - 1/2 Mile South
C7	CAUSGSN00012320	1/4 - 1/2 Mile South
C8	CAUSGS000001747	1/4 - 1/2 Mile South
9	CADWR9000005315	1/2 - 1 Mile North
E11	CADWR9000005228	1/2 - 1 Mile South
F12	CAUSGSN00011078	1/2 - 1 Mile NNW
F15	CADWR9000005318	1/2 - 1 Mile NNW
D16	CADWR9000005258	1/2 - 1 Mile WSW
G17	CADWR9000005317	1/2 - 1 Mile NNE
H18	CADWR9000005295	1/2 - 1 Mile ENE
G19	CAUSGSN00007400	1/2 - 1 Mile NNE
G21	CADWR9000005316	1/2 - 1 Mile NNE
I22	CADWR9000005307	1/2 - 1 Mile NE
I23	CADWR0000009347	1/2 - 1 Mile NE
J25	CADWR0000021744	1/2 - 1 Mile SSW
J26	CADWR0000030101	1/2 - 1 Mile SSW
27	CADWR0000018965	1/2 - 1 Mile SSE
29	CADDW0000018737	1/2 - 1 Mile East
30	CADWR9000005201	1/2 - 1 Mile South
K31	CADWR9000005346	1/2 - 1 Mile NNE
L33	CAUSGSN00012933	1/2 - 1 Mile NNE
34	CADWR0000021699	1/2 - 1 Mile NE
K35	CADWR9000005353	1/2 - 1 Mile NNE
M37	CAUSGSN00000736	1/2 - 1 Mile SE

GEOCHECK® - PHYSICAL SETTING SOURCE SUMMARY

STATE DATABASE WELL INFORMATION

MAP ID	WELL ID	LOCATION FROM TP
N38	CADWR0000034909	1/2 - 1 Mile SSW
N39	CADWR0000007196	1/2 - 1 Mile SSW

PHYSICAL SETTING SOURCE MAP - 6809919.2s



- County Boundary
- Major Roads
- Contour Lines
- Earthquake Fault Lines
- 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:	APN 331-060-018	CLIENT:	LOR Geotechnical Group, Inc.
ADDRESS:	Ethanac Road/Evans Road Menifee CA 92585	CONTACT:	Mathew Hunt
LAT/LONG:	33.742037 / 117.196699	INQUIRY #:	6809919.2s
		DATE:	January 05, 2022 8:15 pm

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GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

A1
West
1/4 - 1/2 Mile
Lower

CA WELLS **CAUSGSN00017156**

Well ID:	USGS-334431117120601	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334431117120601	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334431117120601&store_num=		
GeoTracker Data:	Not Reported		

A2
West
1/4 - 1/2 Mile
Lower

FED USGS **USGS40000137732**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W16D001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	160
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

3
NE
1/4 - 1/2 Mile
Higher

CA WELLS **CADWR0000015366**

Well ID:	05S03W09R00?S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W09R00?S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W09R00?S&store_num=		
GeoTracker Data:	Not Reported		

B4
SW
1/4 - 1/2 Mile
Higher

FED USGS **USGS40000137659**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W16F001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported

Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

B5
SW
1/4 - 1/2 Mile
Higher

CA WELLS **CAUSGSN00014749**

Well ID:	USGS-334415117120201	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334415117120201	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334415117120201&store_num=		
GeoTracker Data:	Not Reported		

C6
South
1/4 - 1/2 Mile
Higher

CA WELLS **CADDW0000017526**

Well ID:	3310009-034	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	WELL 76 (DESALTER SUPPLY)	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=3310009-034&store_num=		
GeoTracker Data:	Not Reported		

C7
South
1/4 - 1/2 Mile
Higher

CA WELLS **CAUSGSN00012320**

Well ID:	USGS-334400117110001	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334400117110001	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334400117110001&store_num=		
GeoTracker Data:	Not Reported		

C8
South
1/4 - 1/2 Mile
Higher

CA WELLS **CAUSGS000001747**

9
North
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000005315**

State Well #:	Not Reported	Station ID:	48335
Well Name:	EMWD14355	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well

Well Depth:	134	Well Completion Rpt #:	Not Reported

D10
WSW
1/2 - 1 Mile
Higher

FED USGS **USGS40000137694**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W17A001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19950206	Well Depth:	160
Well Depth Units:	ft	Well Hole Depth:	160
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	1	Level reading date:	1995-02-07
Feet below surface:	22	Feet to sea level:	Not Reported
Note:	Not Reported		

E11
South
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005228**

State Well #:	Not Reported	Station ID:	48340
Well Name:	EMWD12765	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	0	Well Completion Rpt #:	Not Reported

F12
NNW
1/2 - 1 Mile
Lower

CA WELLS **CAUSGSN00011078**

Well ID:	USGS-334502117120401	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334502117120401	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334502117120401&store_num=		
GeoTracker Data:	Not Reported		

E13
South
1/2 - 1 Mile
Higher

FED USGS **USGS40000137582**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W16P002S	Type:	Well
Description:	Not Reported	HUC:	18070202

Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	1971	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	568
Well Hole Depth Units:	ft		

F14
NNW
1/2 - 1 Mile
Lower

FED USGS **USGS40000137862**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W09E001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19930920	Well Depth:	240
Well Depth Units:	ft	Well Hole Depth:	250
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	81.55	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-06-26	Feet below surface:	84.83
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-04-13	Feet below surface:	83.69
Feet to sea level:	Not Reported	Note:	Not Reported

F15
NNW
1/2 - 1 Mile
Lower

CA WELLS **CADWR9000005318**

State Well #:	05S03W09E001S	Station ID:	6305
Well Name:	EMWD12742	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	236	Well Completion Rpt #:	Not Reported

D16
WSW
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005258**

State Well #:	05S03W17A001S	Station ID:	6316
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

G17
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005317**

State Well #:	05S03W09H002S	Station ID:	6307
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

H18
ENE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005295**

State Well #:	05S03W10N001S	Station ID:	6310
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

G19
NNE
1/2 - 1 Mile
Higher

CA WELLS **CAUSGSN00007400**

Well ID:	USGS-334502117112201	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334502117112201	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334502117112201&store_num=		
GeoTracker Data:	Not Reported		

G20
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137861**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W09H002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19930920	Well Depth:	250.6
Well Depth Units:	ft	Well Hole Depth:	260
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	93.60	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1995-06-26	Feet below surface:	96.28
Feet to sea level:	Not Reported	Note:	Not Reported
Level reading date:	1995-04-13	Feet below surface:	96.00
Feet to sea level:	Not Reported	Note:	Not Reported

G21
NNE **CA WELLS** **CADWR9000005316**
1/2 - 1 Mile
Higher

State Well #:	Not Reported	Station ID:	48337
Well Name:	EMWD12744	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	249	Well Completion Rpt #:	Not Reported

I22
NE **CA WELLS** **CADWR9000005307**
1/2 - 1 Mile
Higher

State Well #:	05S03W10M002S	Station ID:	6309
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

I23
NE **CA WELLS** **CADWR0000009347**
1/2 - 1 Mile
Higher

Well ID:	05S03W10M001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W10M001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W10M001S&store_num=		
GeoTracker Data:	Not Reported		

H24
ENE **FED USGS** **USGS40000137824**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W10N001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	Not Reported
Well Depth Units:	Not Reported	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	2	Level reading date:	1995-09-13
Feet below surface:	95.63	Feet to sea level:	Not Reported
Note:	Not Reported		
Level reading date:	1995-06-02	Feet below surface:	97.98
Feet to sea level:	Not Reported	Note:	Not Reported

J25
SSW **CA WELLS** **CADWR0000021744**
1/2 - 1 Mile
Higher

Well ID:	05S03W16P002S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W16P002S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W16P002S&store_num=		
GeoTracker Data:	Not Reported		

J26
SSW **CA WELLS** **CADWR0000030101**
1/2 - 1 Mile
Higher

Well ID:	05S03W16P001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W16P001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W16P001S&store_num=		
GeoTracker Data:	Not Reported		

27
SSE **CA WELLS** **CADWR0000018965**
1/2 - 1 Mile
Higher

Well ID:	05S03W16R001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W16R001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W16R001S&store_num=		
GeoTracker Data:	Not Reported		

I28
NE **FED USGS** **USGS40000137850**
1/2 - 1 Mile
Higher

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W10M002S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		

Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	Not Reported	Well Depth:	333.7
Well Depth Units:	ft	Well Hole Depth:	Not Reported
Well Hole Depth Units:	Not Reported		

Ground water levels,Number of Measurements:	1	Level reading date:	1995-05-05
Feet below surface:	96.22	Feet to sea level:	Not Reported
Note:	Not Reported		

29
East
1/2 - 1 Mile
Higher

CA WELLS **CADDW0000018737**

Well ID:	3310009-078	Well Type:	MUNICIPAL
Source:	Department of Health Services		
Other Name:	WELL 89 (DESALTER SUPPLY) - STANDBY		
GAMA PFAS Testing:	Not Reported		
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DHS&samp_date=&global_id=&assigned_name=3310009-078&store_num=		
GeoTracker Data:	Not Reported		

30
South
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005201**

State Well #:	Not Reported	Station ID:	48341
Well Name:	EMWD11141	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	154	Well Completion Rpt #:	Not Reported

K31
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005346**

State Well #:	05S03W09H001S	Station ID:	6306
Well Name:	Not Reported	Basin Name:	San Jacinto
Well Use:	Unknown	Well Type:	Unknown
Well Depth:	0	Well Completion Rpt #:	Not Reported

L32
NNE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137891**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W09H001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		

Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19940119	Well Depth:	241.75
Well Depth Units:	ft	Well Hole Depth:	260
Well Hole Depth Units:	ft		

Ground water levels,Number of Measurements:	3	Level reading date:	1995-09-13
Feet below surface:	89.81	Feet to sea level:	Not Reported
Note:	Not Reported		

Level reading date:	1995-06-26	Feet below surface:	92.14
Feet to sea level:	Not Reported	Note:	Not Reported

Level reading date:	1995-04-13	Feet below surface:	92.86
Feet to sea level:	Not Reported	Note:	Not Reported

L33
NNE
1/2 - 1 Mile
Higher

CA WELLS **CAUSGSN00012933**

Well ID:	USGS-334513117112301	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334513117112301	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334513117112301&store_num=		
GeoTracker Data:	Not Reported		

34
NE
1/2 - 1 Mile
Higher

CA WELLS **CADWR0000021699**

Well ID:	05S03W10L001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W10L001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W10L001S&store_num=		
GeoTracker Data:	Not Reported		

K35
NNE
1/2 - 1 Mile
Higher

CA WELLS **CADWR9000005353**

State Well #:	Not Reported	Station ID:	48336
Well Name:	EMWD12743	Basin Name:	San Jacinto
Well Use:	Observation	Well Type:	Single Well
Well Depth:	239	Well Completion Rpt #:	Not Reported

GEOCHECK® - PHYSICAL SETTING SOURCE MAP FINDINGS

Map ID
Direction
Distance
Elevation | Database | EDR ID Number

M36
SE
1/2 - 1 Mile
Higher

FED USGS **USGS40000137613**

Organization ID:	USGS-CA		
Organization Name:	USGS California Water Science Center		
Monitor Location:	005S003W15L001S	Type:	Well
Description:	Not Reported	HUC:	18070202
Drainage Area:	Not Reported	Drainage Area Units:	Not Reported
Contrib Drainage Area:	Not Reported	Contrib Drainage Area Unts:	Not Reported
Aquifer:	California Coastal Basin aquifers		
Formation Type:	Not Reported	Aquifer Type:	Not Reported
Construction Date:	19941015	Well Depth:	150
Well Depth Units:	ft	Well Hole Depth:	150
Well Hole Depth Units:	ft		

M37
SE
1/2 - 1 Mile
Higher

CA WELLS **CAUSGSN00000736**

Well ID:	USGS-334404117105801	Well Type:	UNK
Source:	United States Geological Survey		
Other Name:	USGS-334404117105801	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=USGSNEW&samp_date=&global_id=&assigned_name=USGS-334404117105801&store_num=		
GeoTracker Data:	Not Reported		

N38
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADWR0000034909**

Well ID:	05S03W21C001S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W21C001S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W21C001S&store_num=		
GeoTracker Data:	Not Reported		

N39
SSW
1/2 - 1 Mile
Higher

CA WELLS **CADWR0000007196**

Well ID:	05S03W21C002S	Well Type:	UNK
Source:	Department of Water Resources		
Other Name:	05S03W21C002S	GAMA PFAS Testing:	Not Reported
Groundwater Quality Data:	https://gamagroundwater.waterboards.ca.gov/gama/gamamap/public/GamaDataDisplay.asp?dataset=DWR&samp_date=&global_id=&assigned_name=05S03W21C002S&store_num=		
GeoTracker Data:	Not Reported		

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 and Wildlife
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.

OTHER STATE DATABASE INFORMATION

Groundwater Ambient Monitoring & Assessment Program
State Water Resources Control Board
Telephone: 916-341-5577
The GAMA Program is Californias comprehensive groundwater quality monitoring program. GAMA collects data by testing the untreated, raw water in different types of wells for naturally-occurring and man-made chemicals. The GAMA data includes Domestic, Monitoring and Municipal well types from the following sources, Department of Water Resources, Department of Heath Services, EDF, Agricultural Lands, Lawrence Livermore National Laboratory, Department of Pesticide Regulation, United States Geological Survey, Groundwater Ambient Monitoring and Assessment Program and Local Groundwater Projects.

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.

California Oil and Gas Well Locations
Source: Dept of Conservation, Geologic Energy Management Division
Telephone: 916-323-1779
Oil and Gas well locations in the state.

California Earthquake Fault Lines
Source: California Division of Mines and Geology
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.

RADON

State Database: CA Radon
Source: Department of Public Health
Telephone: 916-210-8558
Radon Database for California

PHYSICAL SETTING SOURCE RECORDS SEARCHED

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.

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 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

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	CASC	Date	7/5/2022
Designed by	KJ	Case No	
Company Project Number/Name	1494-0013		

BMP Identification

BMP NAME / ID MWS 1

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}= 0.60 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)*
DMA 1A	*41,948*	*Ornamental Landscaping*	*0.1*	*0.11*	*4633.5*			
DMA 1B	*138,534*	*Roofs*	*1*	*0.89*	*123572.3*			
DMA 1C	*115,291*	*Concrete or Asphalt*	*1*	*0.89*	*102839.6*			
DA2	*56192*	*Natural (C Soil)*	*0.3*	*0.23*	*12652.5*			
	351965	***Total***			**243697.9**	**0.60**	***12184.9***	***42,299***

Notes:

Santa Ana Watershed - BMP Design Flow Rate, $\mathbf{Q_{BMP}}$

(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	CASC Engineering and Consulting	Date	11/21/2022
Designed by	KJ	Case No	
Company Project Number/Name	1494-0013 MENIFEE 4		

BMP Identification

BMP NAME / ID MWS 2

Must match Name/ID used on BMP Design Calculation Sheet

Design Rainfall Depth

Design Rainfall Intensity I = 0.20 in/hr

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 (use pull-down menu)	Effective Imperivous Fraction, I_f	DMA Runoff Factor	DMA Areas x Runoff Factor	*Design Rainfall Intensity (in/hr)*	*Design Flow Rate (cfs)*	*Proposed Flow Rate (cfs)*
DMAs	*DA 4*	*62291*	*Mixed Surface Types*	*0.81*	*0.61*	*38069.7*			
		62291	***Total***			**38069.7**	**0.20**	***0.2***	***0.206***

Notes:

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements, and since it is the only biofiltration system that can accept inflow pipes several feet below the surface, it can be used not only in decentralized design applications but also as a large central end-of-the-line application for maximum feasibility.

MODEL #	DIMENSIONS	WETLANDMEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)
MWS-L-4-4	4′ x 4′	23	0.052
MWS-L-4-6	4′ x 6′	32	0.073
MWS-L-4-8	4′ x 8′	50	0.115
MWS-L-4-13	4′ x 13′	63	0.144
MWS-L-4-15	4′ x 15′	76	0.175
MWS-L-4-17	4′ x 17′	90	0.206
MWS-L-4-19	4′ x 19′	103	0.237
MWS-L-4-21	4′ x 21′	117	0.268
MWS-L-6-8	7′ x 9′	64	0.147
MWS-L-8-8	8′ x 8′	100	0.230
MWS-L-8-12	8′ x 12′	151	0.346
MWS-L-8-16	8′ x 16′	201	0.462
MWS-L-8-20	9′ x 21′	252	0.577
MWS-L-8-24	9′ x 25′	302	0.693
MWS-L-10-20	10' x 20'	302	0.693

VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE



MODULAR WETLANDS® SYSTEM LINEAR WITH URBANPOND™ PRESTORAGE

In the example above, the Modular Wetlands® System Linear is installed downstream of the UrbanPond storage system. The MWS Linear is designed for the water quality volume and will treat and discharge the required volume within local draindown time requirements. The MWS Linear's unique horizontal flow design, gives it benefits no other biofilter has - the ability to be placed downstream of detention ponds, extended dry detention basins, underground storage systems and permeable paver reservoirs. The system's horizontal flow configuration and built-in orifice control allows it to be installed with just 6" of fall between inlet and outlet pipe for a simple connection to projects with shallow downstream tie-in points.



UrbanPond
Single and Double Modules

DESIGN SUPPORT

Bio Clean engineers are trained to provide you with superior support for all volume sizing configurations throughout the country. Our vast knowledge of state and local regulations allow us to quickly and efficiently size a system to maximize feasibility. Volume control and hydromodification regulations are expanding the need to decrease the cost and size of your biofiltration system. Bio Clean will help you realize these cost savings with the MWS Linear, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- MEETS LID REQUIREMENTS
- BUILT-IN ORIFICE CONTROL STRUCTURE
- WORKS WITH DEEP INSTALLATIONS

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

MENIFEE INDUSTRIAL 3 - 1494-0013

MENIFEE, CA

MC-7200 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-7200.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-7200 CHAMBER SYSTEM

1. STORMTECH MC-7200 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-7200 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-7200 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

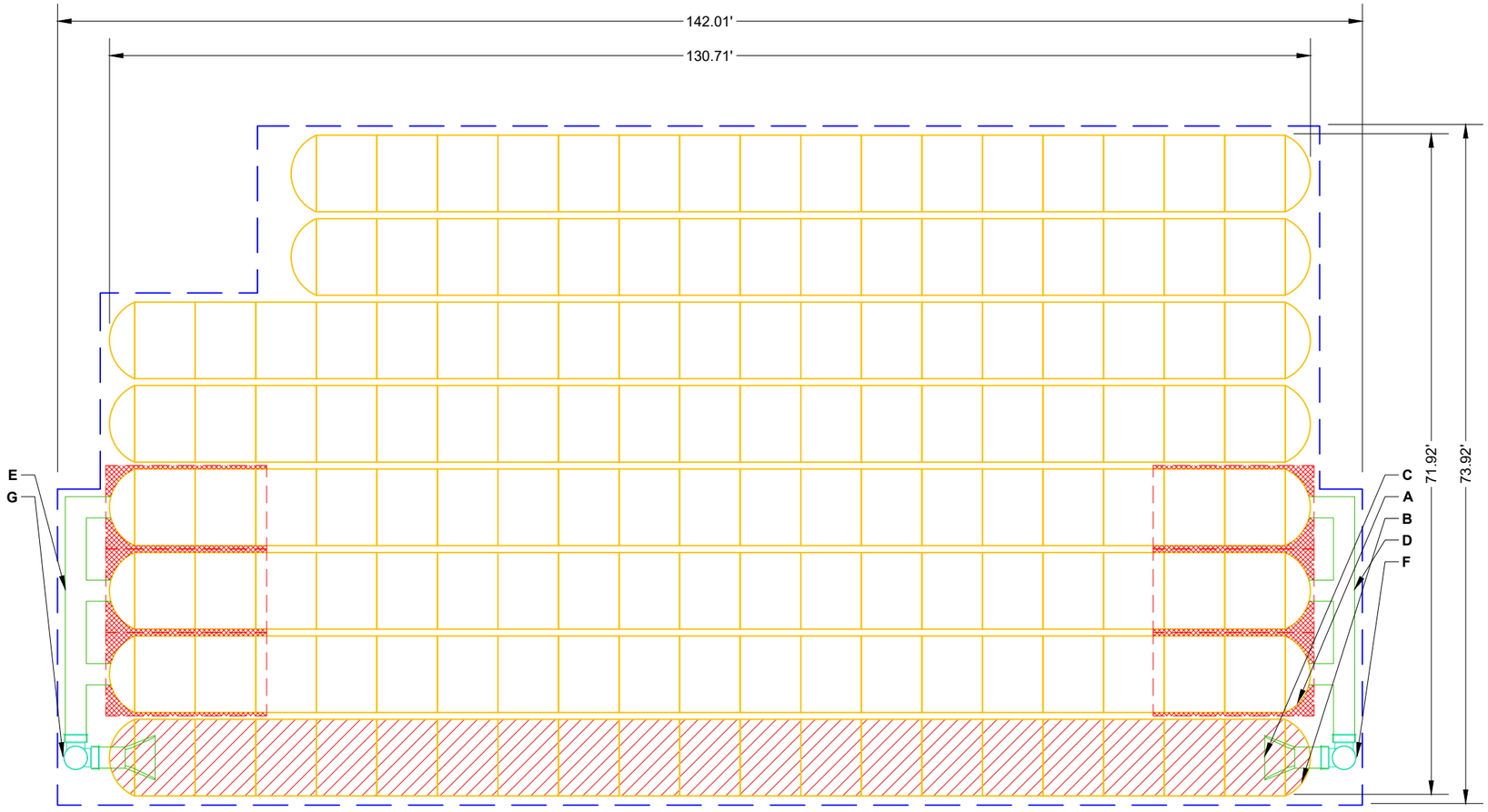
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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PROPOSED LAYOUT		CONCEPTUAL ELEVATIONS	
146	STORMTECH MC-7200 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	12.75
16	STORMTECH MC-7200 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	8.25
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	7.75
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	7.75
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	7.75
42299	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	6.75
		TOP OF MC-7200 CHAMBER:	5.75
		24" x 24" TOP MANIFOLD INVERT:	2.67
		24" x 24" TOP MANIFOLD INVERT:	2.67
9818	SYSTEM AREA (SF)	24" ISOLATOR ROW PLUS INVERT:	0.94
431.9	SYSTEM PERIMETER (ft)	24" ISOLATOR ROW PLUS INVERT:	0.94
		BOTTOM OF MC-7200 CHAMBER:	0.75
		BOTTOM OF STONE:	0.00

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
PREFABRICATED END CAP	A	24" TOP PARTIAL CUT END CAP, PART#: MC7200IEPP24T / TYP OF ALL 24" TOP CONNECTIONS	23.05"	
PREFABRICATED END CAP	B	24" BOTTOM PARTIAL CUT END CAP, PART#: MC7200IEPP24B / TYP OF ALL 24" BOTTOM CONNECTIONS AND ISOLATOR PLUS ROWS	2.26"	
FLAMP	C	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MC720024RAMP (TYP 2 PLACES)		
MANIFOLD	D	24" x 24" TOP MANIFOLD, ADS N-12	23.05"	
MANIFOLD	E	24" x 24" TOP MANIFOLD, ADS N-12	23.05"	
NYLOPLAST (INLET W/ ISO PLUS ROW)	F	30" DIAMETER (24.00" SUMP MIN)		28.5 CFS IN
NYLOPLAST (INLET W/ ISO PLUS ROW)	G	30" DIAMETER (24.00" SUMP MIN)		28.5 CFS IN



ISOLATOR ROW PLUS
(SEE DETAIL)

PLACE MINIMUM 17.50' OF ADSPLUS175 WOVEN GEOTEXTILE OVER BEDDING STONE AND UNDERNEATH CHAMBER FEET FOR SCOUR PROTECTION AT ALL CHAMBER INLET ROWS

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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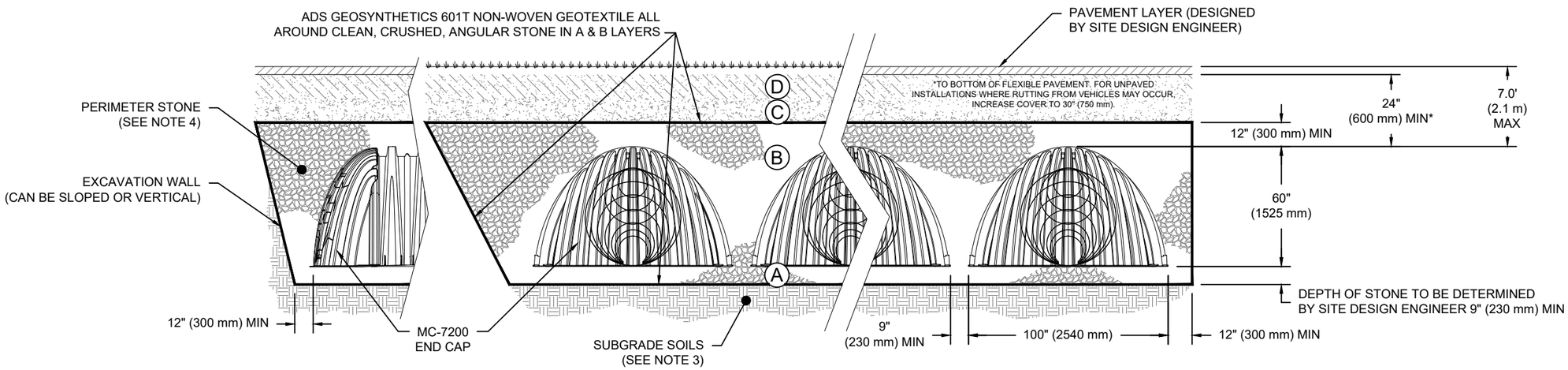
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ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 450 LBS/FT/%. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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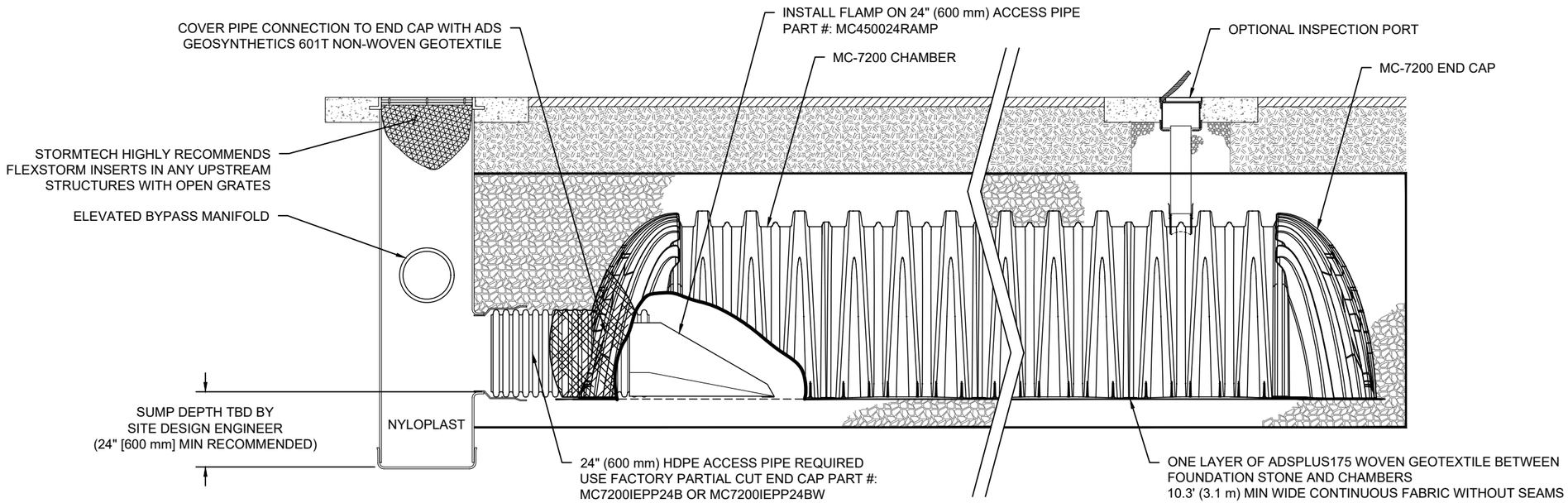
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SHEET
3 OF 6

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MC-7200 ISOLATOR ROW PLUS DETAIL
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INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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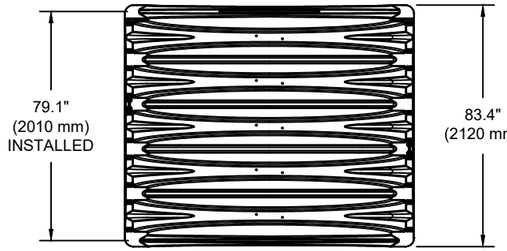
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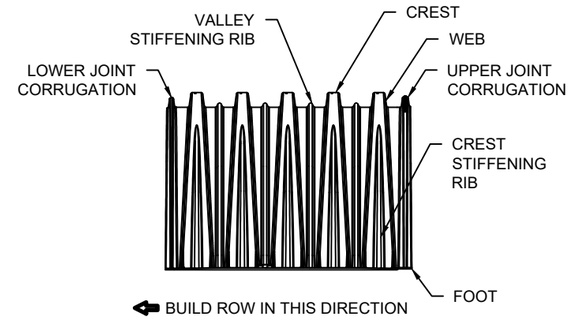
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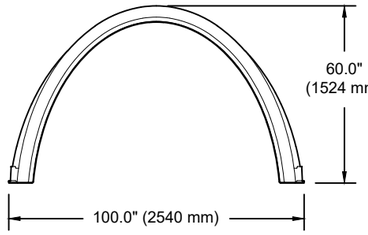
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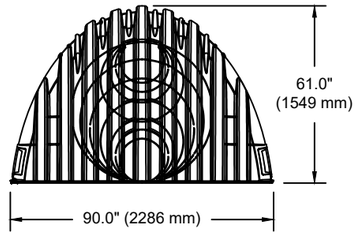
MC-7200 TECHNICAL SPECIFICATION

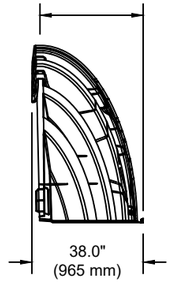
NTS











NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

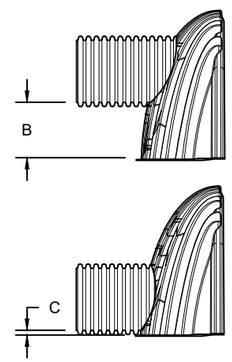
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B		---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B		---	1.70" (43 mm)
MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

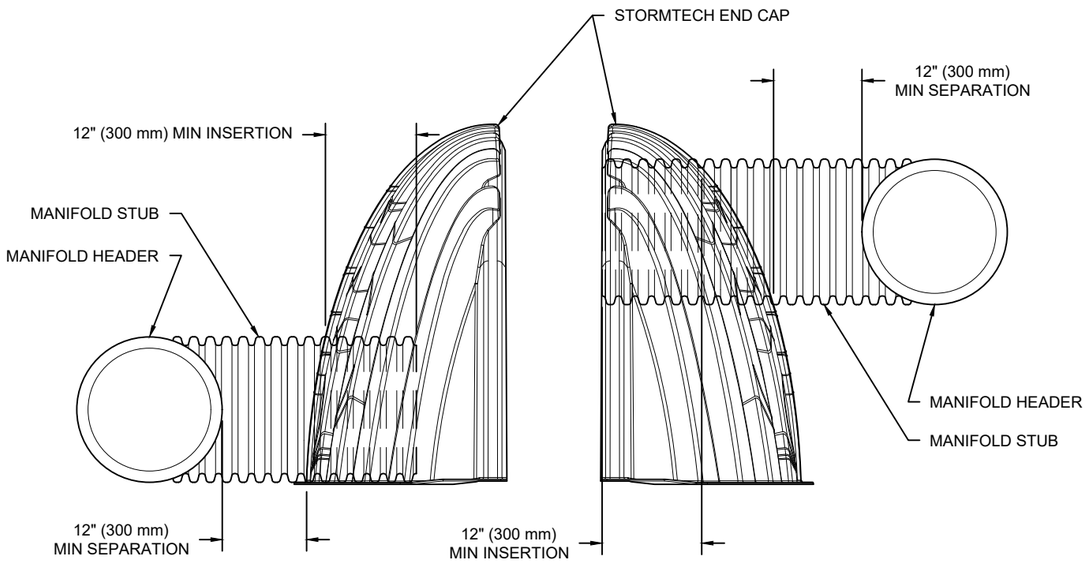
NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-SERIES END CAP INSERTION DETAIL

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NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

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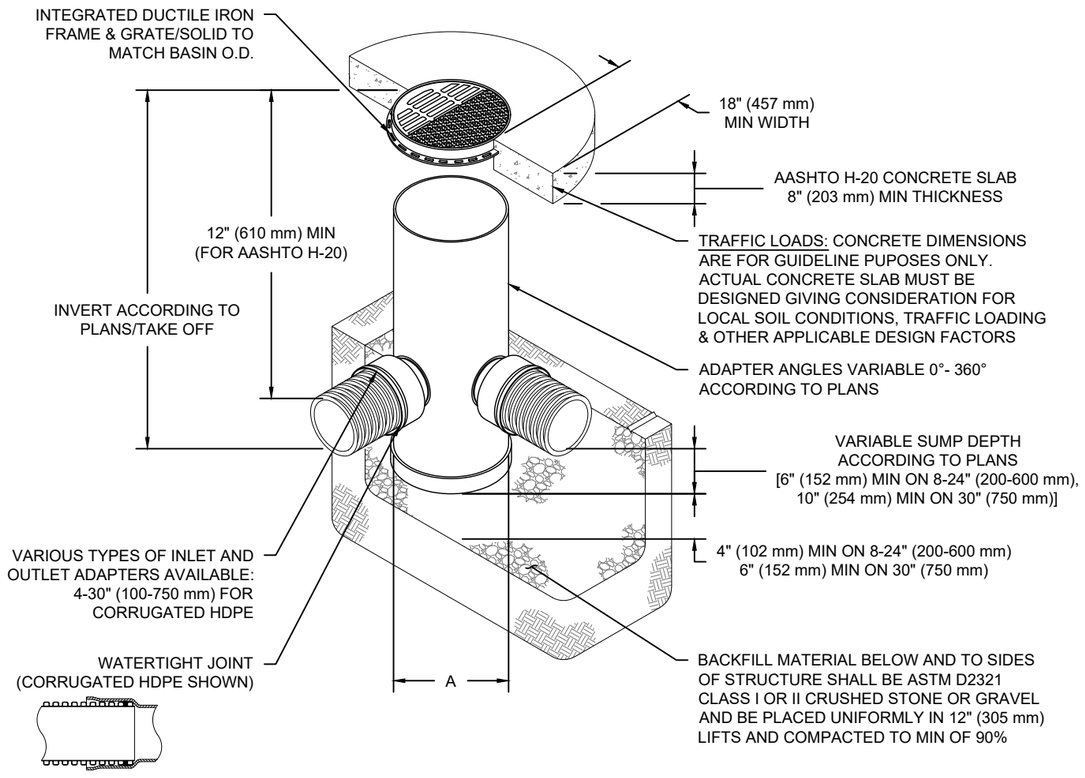
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ADS

NYLOPLAST DRAIN BASIN

NTS



NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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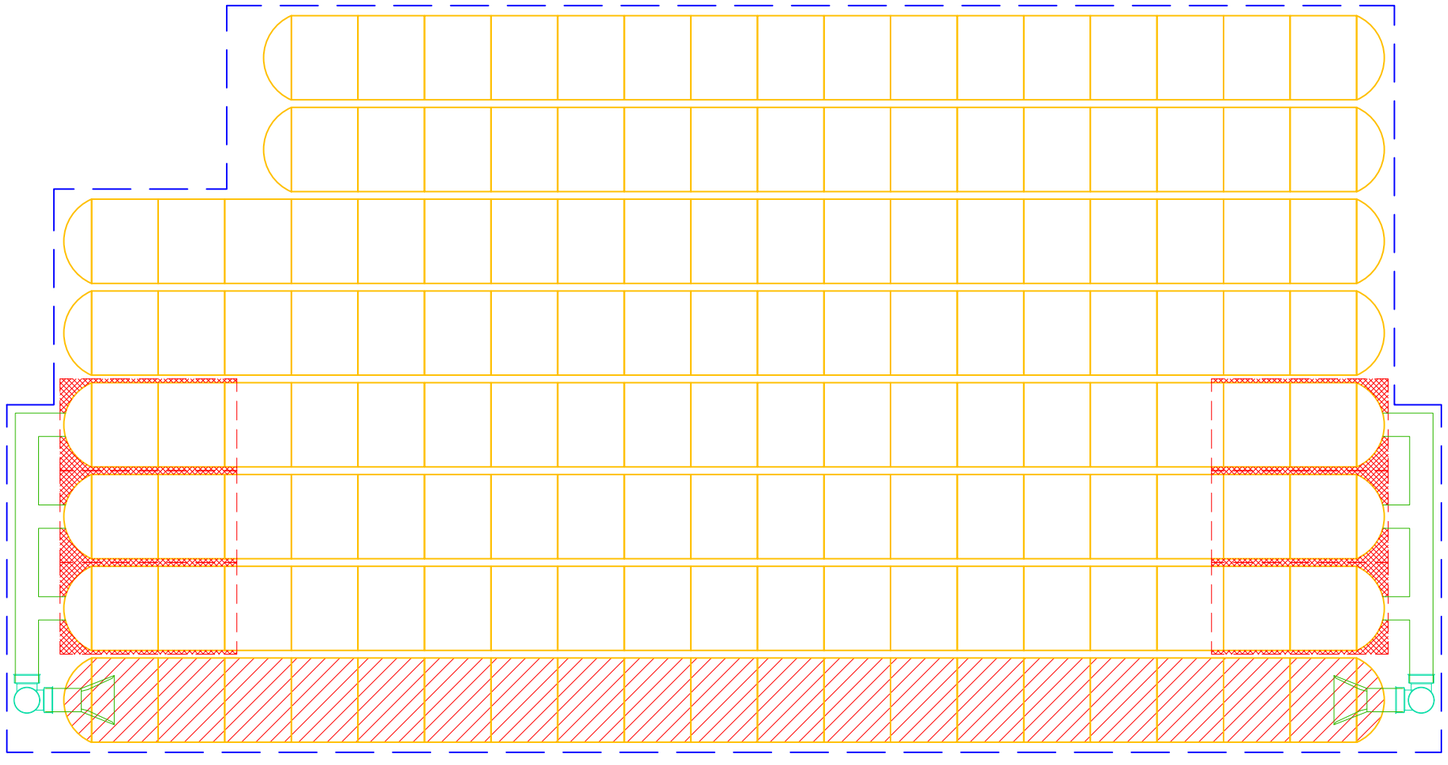
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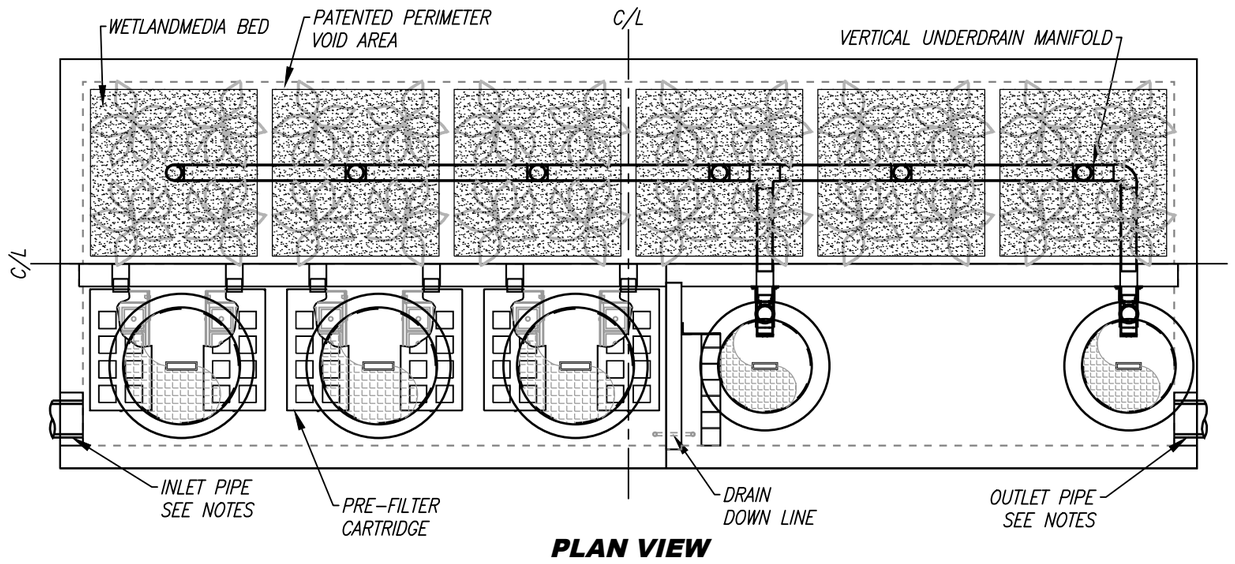
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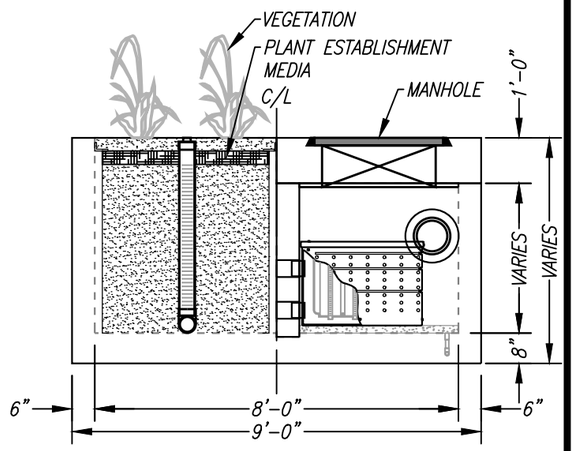


SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
42299		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	3EA ø30"	OPEN PLANTER	2EA ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



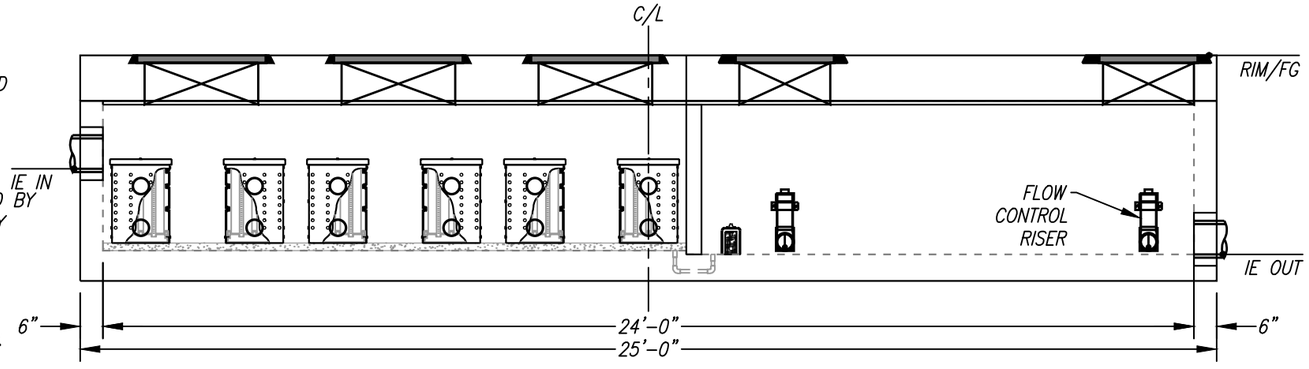
LEFT END VIEW

INSTALLATION NOTES

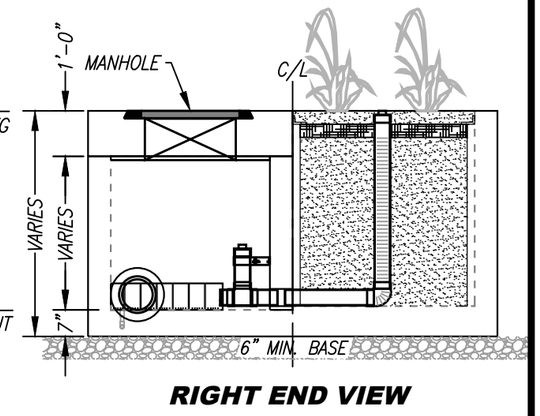
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	42299
DRAINDOWN DURATION (HOURS)	67
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	26.17
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF)	0.26

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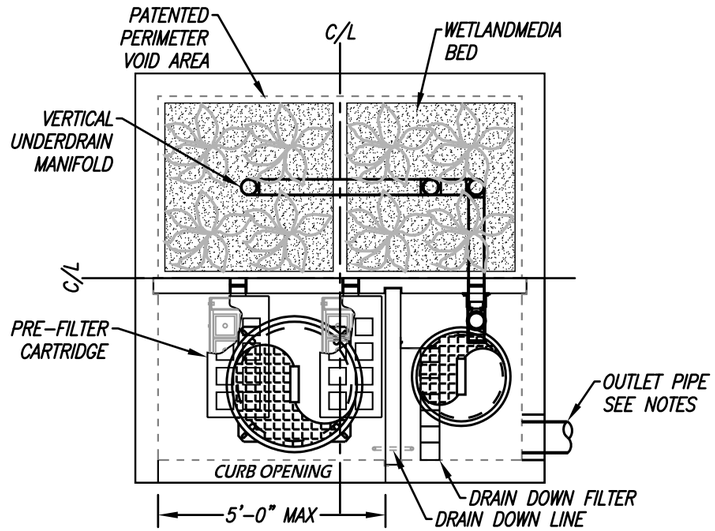
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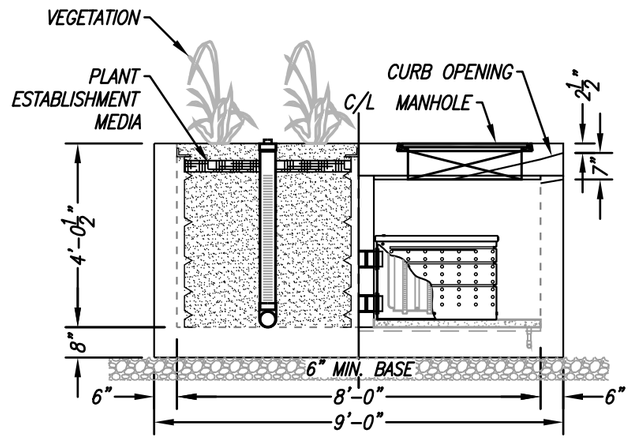
MWS-L-8-24-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

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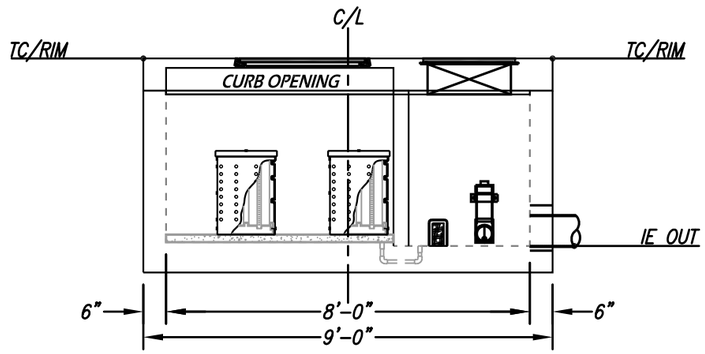
SITE SPECIFIC DATA			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
TREATMENT HGL AVAILABLE (FT)			3.4
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2			
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PARKWAY	OPEN PLANTER	PARKWAY
FRAME & COVER	ø30"	N/A	ø24"
WETLANDMEDIA VOLUME (CY)			4.84
WETLANDMEDIA DELIVERY METHOD			TBD
ORIFICE SIZE (DIA. INCHES)			ø2.16"
MAXIMUM PICK WEIGHT (LBS)			TBD
NOTES:			



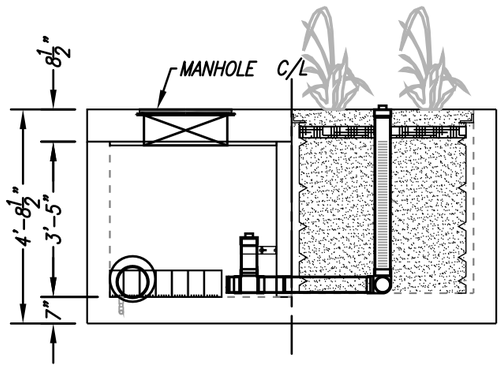
PLAN VIEW



LEFT END VIEW
BIOFILTRATION/PRETREATMENT



ELEVATION VIEW



RIGHT END VIEW
DISCHARGE/BIOFILTRATION

INSTALLATION NOTES

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3. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL GAPS AROUND PIPES SHALL BE SEALED WATER TIGHT WITH A NON–SHRINK GROUT PER MANUFACTURERS STANDARD CONNECTION DETAIL AND SHALL MEET OR EXCEED REGIONAL PIPE CONNECTION STANDARDS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. DRIP OR SPRAY IRRIGATION REQUIRED ON ALL UNITS WITH VEGETATION.

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TREATMENT FLOW (CFS)	0.230
OPERATING HEAD (FT)	3.4
PRETREATMENT LOADING RATE (GPM/SF)	TBD
WETLAND MEDIA LOADING RATE (GPM/SF)	1.0

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PROPRIETARY AND CONFIDENTIAL:

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MWS-L-8-8-C
STORMWATER BIOFILTRATION SYSTEM
STANDARD DETAIL

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

The project will use underground detention chambers to detain runoff and slowly release it via proposed pump & Modular Wetlands System into Evans Road. The proposed pumping system will be designed to restrict outflows to allowable limits: for HCOC, the 2-year, 24-hour peak flow (proposed) can be up to 110% of the existing condition 2-year, 24-hour peak; to meet the County of Riverside Increased Runoff Criteria, proposed 2-year, 5-year, and 10-year flows for the 1-hour, 3-hour, 6-hour, and 24-hour storms is not to exceed existing peak flows.

Detailed analysis and design will be provided in the final drainage report and WQMP. For preliminary design, the difference in the 10-year, 24-hour storm volumes (existing versus proposed) is generally used to estimate to estimate the expected requirement for detention sizing. For this project, the difference in the 10-year, 24-hour storm volume (existing versus proposed) was larger than the 2-year; therefore, the 10-year storm volume difference was used to preliminarily size the proposed detention system. Refinement of the detention sizing will occur in final design. Design of the proposed pumps will also be part of final design.

Increased Runoff Volume Calculation

	10 year – 24-hour storm			
	Pre-Project	Post-Project	Difference	Volume of proposed chambers
Volume DA 1 (cf)	26,084	68,463	42,380	42,300

HCOC Volume Calculation

	2 year – 24-hour storm			
	Pre-Project	Post-Project	Difference	Volume of proposed chambers
Volume DA 1 (cf)	4,992	40,942	35,950	42,300

Since the site does not infiltrate, outflows are limited to 110% of the 2-year, 24-hour peak flow for the pre-project condition. The following table shows the peak flow limit the project is required to meet in order to comply with HCOC, and the unmitigated peak flow for the post-project condition.

HCOC Flow Calculations

	2-year, 24-hour storm		
	Pre-Project	Allowable Post-Project (110% of Pre-Project) – Pump Limit	Post-Project (unmitigated)
Flow Rate DA 1 (cfs)	0.182	0.200	1.533

Further analysis will be provided in final design, including routing analysis to determine the final detention volume required to mitigate peak flows to meet HCOC and Riverside County Increased Runoff Criteria.

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**

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

To be provided at Final Submittal.

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

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.

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?

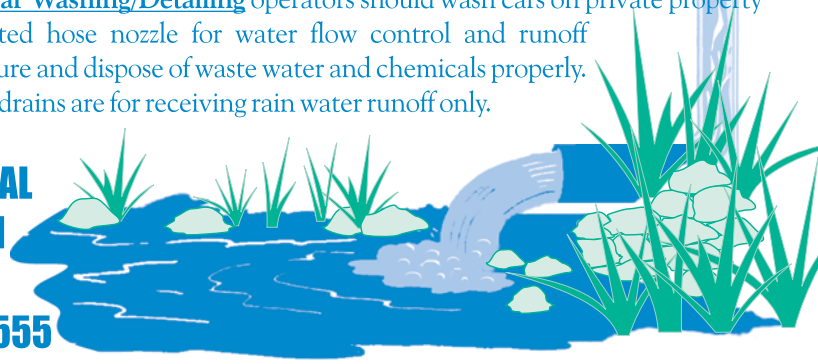
Storm drains are NOT connected to sanitary sewer systems and treatment plants!



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.

After the Storm

A Citizen's Guide to Understanding Stormwater



For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

United States Environmental Protection Agency

EPA 833-B-03-002

January 2003

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THE YEAR OF CLEAN WATER
Celebration + Recommitment

What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution



Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.



- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.



- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions



Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care



Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste



Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.



Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Commercial

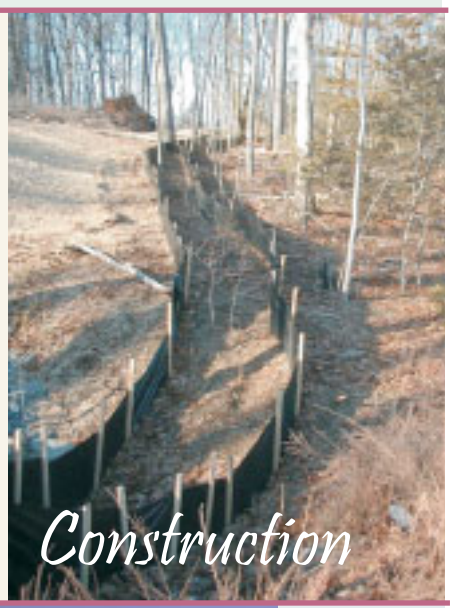
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.





Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



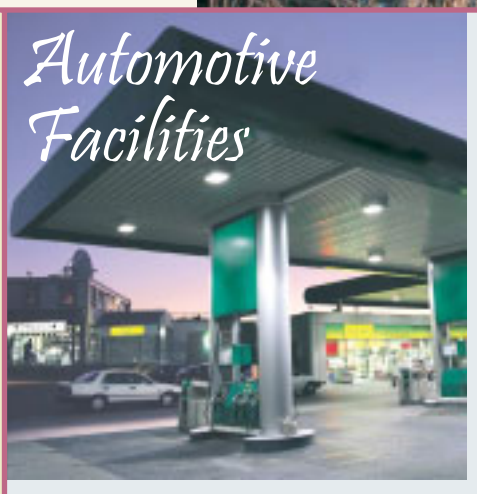
- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

IRRIGATION RUNOFF

STORMWATER FACT SHEET

Report Irrigation Runoff or Stormwater Pollution:
800.506.2555

RIVERSIDE COUNTY
WATERSHED PROTECTION

OVERWATERING

Overwatering causes irrigation runoff that may contain pollutants such as pesticides, herbicides, fertilizers, pet waste, yard waste, and sediments which can be hazardous to residents and harmful to our environment. Runoff can also serve as a transport mechanism for other pollutants already on the ground or in the curb gutter. Irrigation runoff entering the storm drain system is an illicit discharge.

BEST PRACTICES

Urban runoff begins when yards and landscaped areas are over-irrigated. Irrigation systems require regular maintenance and visual inspection of the system should be performed to prevent over-spray, leaks, and other problems that result in runoff to storm drains, curbs and gutters.

You can **prevent pollution** by conserving water on your property. Water during cooler times of the day (before 10am and after 6pm).

- Adjust sprinklers to stop overspray and runoff.
- Make needed repairs immediately.
- Use drip irrigation, soaker hoses, or micro-spray systems.
- Use an irrigation timer to pre-set watering times.
- Use a control nozzle or similar mechanism when watering by hand.
- Switch to a water-wise landscape - native plants need less fertilizers, herbicides, pesticides and water.







PROTECT OUR WATERSHED

Many people think that when water flows into a storm drain it is treated, but the storm drain system and the sanitary sewer system are not connected. Everything that enters storm drains flows untreated directly into our creeks, rivers, lakes, beaches and ultimately the ocean. Storm water often contains pollutants, including chemicals, trash, and automobile fluids, all of which pollute our watershed and harm fish and wildlife.

Whether at home or work, you can help reduce pollution and improve water quality by using the above Best Management Practices (BMP's) as part of your daily clean up and maintenance routine.

Non-Stormwater Discharges SC-10

Description

Non-stormwater discharges (NSWDs) are flows that do not consist entirely of stormwater. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain if local regulations allow. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include: potable water sources, fire hydrant flushing, air conditioner condensate, landscape irrigation drainage and landscape watering, emergency firefighting, etc. as discussed in Section 2.

However there are certain non-stormwater discharges that pose an environmental concern. These discharges may originate from illegal dumping of industrial material or wastes and illegal connections such as internal floor drains, appliances, industrial processes, sinks, and toilets that are illegally connected to the nearby storm drainage system through on-site drainage and piping. These unauthorized discharges (examples of which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants into storm drains.

Non-stormwater discharges will need to be addressed through a combination of detection and elimination. The ultimate goal is to effectively eliminate unauthorized non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges of

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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pollutants on streets and into the storm drain system and downstream water bodies.

Approach

Initially the Discharger must make an assessment of non-stormwater discharges to determine which types must be eliminated or addressed through BMPs. The focus of the following approach is the elimination of unauthorized non-stormwater discharges. See other BMP Fact Sheets for activity-specific pollution prevention procedures.

General Pollution Prevention Protocols

- Implement waste management controls described in SC-34 Waste Handling and Disposal.

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially those that are not classified as hazardous. These are often not responded to as effectively as they need to be.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled or demarcated next to them to warn against ignorant or unintentional dumping of pollutants into the storm drainage system.

- Manage and control sources of water such as hose bibs, faucets, wash racks, irrigation heads, etc. Identify hoses and faucets in the SWPPP, and post signage for appropriate use.

Non-Stormwater Discharge Investigation Protocols

Identifying the sources of non-stormwater discharges requires the Discharger to conduct an investigation of the facility at regular intervals. There are several categories of non-stormwater discharges:

- Visible, easily identifiable discharges, typically generated as surface runoff, such as uncontained surface runoff from vehicle or equipment washing; and

- Non-visible, (e.g., subsurface) discharges into the site drainage system through a variety of pathways that are not obvious.

The approach to detecting and eliminating non-stormwater discharges will vary considerably, as discussed below:

Visible and identifiable discharges

- Conduct routine inspections of the facilities and of each major activity area and identify visible evidence of unauthorized non-stormwater discharges. This may include:

  - ✓ Visual observations of actual discharges occurring;

- ✓ Evidence of surface staining, discoloring etc. that indicates that discharges have occurred;
- ✓ Pools of water in low lying areas when a rain event has not occurred; and
- ✓ Discussions with operations personnel to understand practices that may lead to unauthorized discharges.

- ☐ If evidence of non-stormwater discharges is discovered:
  - ✓ Document the location and circumstances using Worksheets 5 and 6 (Section 2 of the manual), including digital photos;
  - ✓ Identify and implement any quick remedy or corrective action (e.g., moving uncovered containers inside or to a proper location); and
  - ✓ Develop a plan to eliminate the discharge. Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge.
- ☐ Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge. Make sure the facility SWPPP is up-to-date and includes applicable BMPs to address the non-stormwater discharge.

Other Illegal Discharges (Non visible)

Illicit Connections

- ☐ Locate discharges from the industrial storm drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- ☐ Isolate problem areas and plug illicit discharge points.
- ☐ Locate and evaluate discharges to the storm drain system.
- ☐ Visual Inspection and Inventory:
  - ✓ Inventory and inspect each discharge point during dry weather.
  - ✓ Keep in mind that drainage from a storm event can continue for a day or two following the end of a storm and groundwater may infiltrate the underground stormwater collection system.
  - ✓ Non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- ☐ A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system.

- Inspect the path of loading/unloading area drain inlets and floor drains in older buildings.

- Never assume storm drains are connected to the sanitary sewer system.

Monitoring for investigation/detection of illegal discharges

- If a suspected illegal or unknown discharge is detected, monitoring of the discharge may help identify the content and/or suggest the source. This may be done with a field screening analysis, flow meter measurements, or by collecting a sample for laboratory analysis. Section 5 and Appendix D describe the necessary field equipment and procedures for field investigations.

- Investigative monitoring may be conducted over time. For example if, a discharge is intermittent, then monitoring might be conducted to determine the timing of the discharge to determine the source.

- Investigative monitoring may be conducted over a spatial area. For example, if a discharge is observed in a pipe, then monitoring might be conducted at accessible upstream locations in order to pinpoint the source of the discharge.

- Generally, investigative monitoring requiring collection of samples and submittal for lab analysis requires proper planning and specially trained staff.

Smoke Testing

Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two piping systems. Smoke testing is generally performed at a downstream location and the smoke is forced upstream using blowers to create positive pressure. The advantage to smoke testing is that it can potentially identify multiple potential discharge sources at once.

- Smoke testing uses a harmless, non-toxic smoke cartridges developed specifically for this purpose.

- Smoke testing requires specialized equipment (e.g., cartridges, blowers) and is generally only appropriate for specially trained staff.

- A Standard Operating Procedure (SOP) for smoke testing is highly desirable. The SOP should address the following elements:

  - ✓ Proper planning and notification of nearby residents and emergency services is necessary since introducing smoke into the system may result in false alarms;

  - ✓ During dry weather, the stormwater collection system is filled with smoke and then traced back to sources;

- ✓ Temporary isolation of segments of pipe using sand bags is often needed to force the smoke into leaking pipes; and

- ✓ The appearance of smoke in a waste vent pipe, at a sewer manhole, or even the base of a toilet indicates that there may be a connection between the sanitary and storm water systems.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct smoke testing and they should be contacted if cross connections with the sanitary sewer are suspected. See SC-44 Drainage System Maintenance for more information.

Dye Testing

- Dye testing is typically performed when there is a suspected specific pollutant source and location (i.e., leaking sanitary sewer) and there is evidence of dry weather flows in the stormwater collection system.

- Dye is released at a probable upstream source location, either the facility's sanitary or process wastewater system. The dye must be released with a sufficient volume of water to flush the system.

- Operators then visually examine the downstream discharge points from the stormwater collection system for the presence of the dye.

- Dye testing can be performed informally using commercially available products in order to conduct an initial investigation for fairly obvious cross-connections.

- More detailed dye testing should be performed by properly trained staff and follow SOPs. Specialized equipment such as fluorometers may be necessary to detect low concentrations of dye.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct dye testing and they should be contacted if cross connections with the sanitary sewer are suspected.

TV Inspection of Drainage System

- Closed Circuit Television (CCTV) can be employed to visually identify illicit connections to the industrial storm drainage system. Two types of CCTV systems are available: (1) a small specially designed camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping, or (2) a larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe.

- CCTV systems often include a high-pressure water jet and camera on a flexible cable. The water jet cleans debris and biofilm off the inside of pipes so the camera can take video images of the pipe condition.

- CCTV units can detect large cracks and other defects such as offsets in pipe ends caused by root intrusions or shifting substrate.
- CCTV can also be used to detect dye introduced into the sanitary sewer.
- CCTV inspections require specialized equipment and properly trained staff and are generally best left to specialized contractors or municipal public works staff.

Illegal Dumping

- Substances illegally dumped on streets and into the storm drain systems and creeks may include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. These wastes can cause stormwater and receiving water quality problems as well as clog the storm drain system itself.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills);
  - ✓ An anonymous tip/reporting mechanism; and
  - ✓ Evidence of responsible parties (e.g., tagging, encampments, etc.).
- One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people at the facility who are aware of the problem and who have the tools to at least identify the incident, if not correct it. Therefore, train field staff to recognize and report the incidents.

Once a site has been cleaned:

- Post "No Dumping" signs with a phone number for reporting dumping and disposal.
- Landscaping and beautification efforts of hot spots may also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.
- See fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Conduct field investigations of the industrial storm drain system for potential sources of non-stormwater discharges.
- Pro-actively conduct investigations of high priority areas. Based on historical data, prioritize specific geographic areas and/or incident type for pro-active investigations.



Spill and Leak Prevention and Response

- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See SC-11 Spill Prevention Control and Cleanup.



Employee Training Program

- Training of technical staff in identifying and documenting illegal dumping incidents is required. The frequency of training must be presented in the SWPPP, and depends on site-specific industrial materials and activities.
- Consider posting a quick reference table near storm drains to reinforce training.
- Train employees to identify non-stormwater discharges and report discharges to the appropriate departments.
- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan. Employees should be able to identify work/jobs with high potential for spills and suggest methods to reduce possibility.
- Determine and implement appropriate outreach efforts to reduce non-permissible non-stormwater discharges.

- Conduct spill response drills annually (if no events occurred) in order to evaluate the effectiveness of the plan.
- When a responsible party is identified, educate the party on the impacts of his or her actions.



Quality Assurance and Record Keeping

Performance Evaluation

- Annually review internal investigation results; assess whether goals were met and what changes or improvements are necessary.
- Obtain feedback from personnel assigned to respond to, or inspect for, illicit connections and illegal dumping incidents.
- Develop document and data management procedures.
- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained, and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Annually document and report the results of the program.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.
- Document training activities.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Many facilities do not have accurate, up-to-date 'as-built' plans or drawings which may be necessary in order to conduct non-stormwater discharge assessments.
  - ✓ Online tools such as Google Earth™ can provide an aerial view of the facility and may be useful in understanding drainage patterns and potential sources of non-stormwater discharges
  - ✓ Local municipal jurisdictions may have useful drainage systems maps.

- Video surveillance cameras are commonly used to secure the perimeter of industrial facilities against break-ins and theft. These surveillance systems may also be useful for capturing illegal dumping activities. Minor, temporary adjustments to the field of view of existing surveillance camera systems to target known or suspected problem areas may be a cost-effective way of capturing illegal dumping activities and identifying the perpetrators.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital facility cost requirements may be minimal unless cross-connections to storm drains are detected.
- Indoor floor drains may require re-plumbing if cross-connections are detected.
- Leaky sanitary sewers will require repair or replacement which can have significant costs depending on the size and industrial activity at the facility.

Maintenance (including administrative and staffing)

- The primary effort is for staff time and depends on how aggressively a program is implemented.
- Costs for containment, and disposal of any leak or discharge is borne by the Discharger.
- Illicit connections can be difficult to locate especially if there is groundwater infiltration.
- Illegal dumping and illicit connection violations requires technical staff to detect and investigate them.

Supplemental Information

Permit Requirements

The IGP authorizes certain Non-Storm Water Discharges (NSWDs) provided BMPs are included in the SWPPP and implemented to:

- Reduce or prevent the contact of authorized NSWDs with materials or equipment that are potential sources of pollutants;
- Reduce, to the extent practicable, the flow or volume of authorized NSWDs;
- Ensure that authorized NSWDs do not contain quantities of pollutants that cause or contribute to an exceedance of a water quality standards (WQS); and,

- Reduce or prevent discharges of pollutants in authorized NSWDs in a manner that reflects best industry practice considering technological availability and economic practicability and achievability."

References and Resources

Center for Watershed Protection, 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, EPA Cooperative Agreement X-82907801-0.

Dublin San Ramon Sanitation District. http://www.dsrsd.com/wwrw/smoketest.html.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*, Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp.org.

Southern California Coastal Water Research Project, 2013. *The California Microbial Source Identification Manual: A Tiered Approach to Identifying Fecal Pollution Sources to Beaches,* Technical Report 804.

The Storm Water Managers Resource Center, http://www.stormwatercenter.net/.

US EPA. National Pollutant Discharge Elimination System. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=111.

WEF Press Alexandria, Virginia, 2009.Existing Sewer Evaluation and Rehabilitation: *WEF Manual of Practice No. FD-6 ASCE/EWRI Manuals and Reports on Engineering Practice No. 62, Third Edition.*

Outdoor Loading/Unloading SC-30

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by wind, stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- Limit exposure of material to rainfall whenever possible.
- Prevent stormwater run-on.
- Check equipment regularly for leaks.



Good Housekeeping

- Develop an operations plan that describes procedures for loading and/or unloading.
- Conduct loading and unloading in dry weather if possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- Consider placing a seal or door skirt between delivery vehicles and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on, which would include grading or berming the area, and position roof downspouts so they direct stormwater away from the loading/unloading areas.
- Have employees load and unload all materials and equipment in covered areas such as building overhangs at loading docks if feasible.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains inlets in the area.
- Grade and/or berm the loading/unloading area with drainage to sump; regularly remove materials accumulated in sump.



Spill Response and Prevention Procedures

- Keep your spill prevention and control plan up-to-date or have an emergency spill cleanup plan readily available, as applicable.
- Contain leaks during transfer.
- Store and maintain appropriate spill cleanup materials in a location that is readily accessible and known to all employees.
- Ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Use drip pans or comparable devices when transferring oils, solvents, and paints.



Material Handling and Waste Management

- Spot clean leaks and drips routinely to prevent runoff of spillage.
- Do not pour liquid wastes into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.

- Do not put used or leftover cleaning solutions, solvents, and automotive fluids in the storm drain or sanitary sewer.
- Collect leaking or dripping fluids in drip pans or containers. Fluids are easier to recycle if kept separate.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave drip pans or other open containers lying around.
- Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:
  - ✓ Use only watertight waste receptacle(s) and keep the lid(s) closed.
  - ✓ Grade and pave the waste receptacle area to prevent run-on of stormwater.
  - ✓ Install a roof over the waste receptacle area.
  - ✓ Install a low containment berm around the waste receptacle area.
  - ✓ Use and maintain drip pans under waste receptacles.
- Post "no littering" signs.
- Perform work area clean-up and dry sweep after daily operations.



Employee Training Program

- Train employees (e.g., fork lift operators) and contractors on proper spill containment and cleanup.
- Have employees trained in spill containment and cleanup present during loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.
- Make sure forklift operators are properly trained on loading and unloading procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document activities performed, quantities of materials removed, and improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Establish procedures to complete logs and file them in the central office.
- Keep accurate logs of daily clean-up operations.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
  - ✓ Designate specific areas for outdoor loading and unloading.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.
- It may not be possible to conduct transfers only during dry weather.
  - ✓ Limit materials and equipment rainfall exposure to all extents practicable.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

Many facilities will already have indoor or covered areas where loading/unloading takes place and will require no additional capital expenditures.

If outdoor activities are required, construction of berms or other means to retain spills and leaks may require appropriate constructed systems for containment. These containment areas may require significant new capital investment.

Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

Most of the operations and maintenance activities associated with implementing this BMP are integrally linked to routine operations as previously described. Therefore additional O&M is not required.

- Conduct regular inspections and make repairs and improvements as necessary.
- Check loading and unloading equipment regularly for leaks.
- Conduct regular broom dry-sweeping of area. Do not wash with water.

Supplemental Information

Loading and Unloading of Liquids

- Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer,

treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - ✓ The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - ✓ The transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
  - ✓ The transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer. A positive control valve should be installed on the drain.
- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:
  - ✓ Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and breaking connections.
  - ✓ Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315*. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: *Best Management Practices*. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/.

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Waste Handling & Disposal SC-34

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Accomplish reduction in the amount of waste generated using the following source controls:
  - ✓ Production planning and sequencing;
  - ✓ Process or equipment modification;
  - ✓ Raw material substitution or elimination;
  - ✓ Loss prevention and housekeeping;
  - ✓ Waste segregation and separation; and
  - ✓ Close loop recycling.
- ☐ Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- ☐ Recycle materials whenever possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Use the entire product before disposing of the container.
- To the extent possible, store wastes under cover or indoors after ensuring all safety concerns such as fire hazard and ventilation are addressed.
- Provide containers for each waste stream at each work station. Allow time after shift to clean area.



Good Housekeeping

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain. Clean in a designated wash area that drains to a clarifier.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- If possible, move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.



Preventative Maintenance

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.

- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, vacuuming, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.



Spill Response and Prevention Procedures

- Keep your spill prevention and plan up-to-date.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - ✓ Vehicles equipped with baffles for liquid waste; and
  - ✓ Trucks with sealed gates and spill guards for solid waste.



Material Handling and Waste Management

Litter Control

- Post “No Littering” signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.

- Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers and protect them from vandalism.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for waste handling and disposal, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.

- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and the types of waste handled. Significant capital costs may be associated with reducing wastes by modifying processes or implementing closed-loop recycling.
- Many facilities will already have indoor covered areas where waste materials will be stored and will require no additional capital expenditures for providing cover.
- If outdoor storage of wastes is required, construction of berms or other means to prevent stormwater run-on and runoff may require appropriate constructed systems for containment.
- Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315,* Revised. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: Best Management Practices. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ☐ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.



Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.

- □ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- □ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

- □ Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- □ Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills); and
  - ✓ Responsible parties.
- □ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- □ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.



Preventative Maintenance

Catch Basins/Inlet Structures

- □ Staff should regularly inspect facilities to ensure compliance with the following:
  - ✓ Immediate repair of any deterioration threatening structural integrity.
  - ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.



Spill Response and Prevention Procedures

- Keep your spill prevention control plan up-to-date.

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended "work-arounds" for drainage system maintenance:

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

  - ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.

  - ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

  - ✓ Do not dump illegal materials anywhere onsite.

  - ✓ Identify illicit connections, illicit discharge, and illegal dumping.

  - ✓ Cleanup spills immediately and properly dispose of wastes.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.

  - ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.

  - ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .

- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

City of Seattle, Seattle Public Utilities Department of Planning and Development, 2009. *Stormwater Manual Vol. 1 Source Control Technical Requirements Manual*.

Knox County Tennessee *Stormwater Management Manual* Chapter 5 Drainage System Maintenance, 2008. Available online at: http://www.knoxcounty.org/stormwater/manual/Volume%201/knoxco_swmm_v1_chap5_jan2008.pdf.

US EPA. Storm Drain System Cleaning, 2012. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=102.

Plaza and Sidewalk Cleaning SC-71



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. This fact sheet describes good housekeeping practices that can be incorporated into the municipality's existing cleaning and maintenance program.

Approach

Pollution Prevention

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).

Suggested Protocols

Surface Cleaning

- Regularly broom (dry) sweep sidewalk, plaza and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Block the storm drain or contain runoff when cleaning with water. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed. (Permission may be required from local sanitation district.)

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- Block the storm drain or contain runoff when washing parking areas, driveways or drive-throughs. Use absorbents to pick up oil; then dry sweep. Clean with or without soap. Collect water and pump to a tank or discharge to sanitary sewer if allowed. Street Repair and Maintenance.

Graffiti Removal

- Avoid graffiti abatement activities during rain events.
- Implement the procedures under Painting and Paint Removal in SC-70 Roads, Streets, and Highway Operation and Maintenance fact sheet when graffiti is removed by painting over.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if authorized to do so if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound). Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

Surface Removal and Repair

- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up as much material as possible.
- Designate an area for clean up and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to landscaping or collected and pumped to the sanitary sewer if allowed.

Concrete Installation and Repair

- Schedule asphalt and concrete activities for dry weather.

- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place san bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- Protect applications of fresh concrete from rainfall and runoff until the material has dried.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Clean parking lots on a regular basis with a street sweeper.

Training

- Provide regular training to field employees and/or contractors regarding surface cleaning and proper operation of equipment.
- Train employee and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include current sweeper technology to remove oil and grease.
- Surface cleaning activities that require discharges to the local sewering agency will require coordination with the agency.
- Arrangements for disposal of the swept material collected must be made, as well as accurate tracking of the areas swept and the frequency of sweeping.

Requirements

Costs

- The largest expenditures for sweeping and cleaning of sidewalks, plazas, and parking lots are in staffing and equipment. Sweeping of these areas should be incorporated into street sweeping programs to reduce costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Community education, such as informing residents about their options for recycling and waste disposal, as well as the consequences of littering, can instill a sense of citizen responsibility and potentially reduce the amount of maintenance required by the municipality.

Additional BMPs that should be considered for parking lot areas include:

- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

References and Resources

Bay Area Stormwater Management Agencies Association (BASMAA). 1996. Pollution From Surface Cleaning Folder http://www.basmaa.org

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Plan. 2001. Municipal Activities Model Program Guidance. November.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.

APPENDIX I5

WHEAT STREET PRELIMINARY DRAINAGE REPORT

PRELIMINARY DRAINAGE ANALYSIS

FOR

APN 330-180-012

WHEAT STREET

CITY OF MENIFEE

RIVERSIDE COUNTY, CALIFORNIA

Prepared for:

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MARCH 25, 2022

REVISED JUNE 15, 2022

This report has been prepared by or under the direction of the following registered civil engineer who attests to the technical information contained herein.



6/15/2022

Patrick C. Flanagan Jr., P.E. | Date | Seal
Registered Civil Engineer

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I. PURPOSE AND SCOPE

The purpose of this drainage analysis is to quantify the 10-year storm event runoff emanating from the on-site drainage areas for the proposed industrial warehouse development located in the City of Menifee, Riverside County, California. The study will analyze the existing and proposed hydrologic conditions of the Project's drainage areas and determine the necessary drainage improvements to convey Project flows through the property.

The scope of this analysis includes the following:

1. Determination of points of flow concentration and drainage areas.
2. Determination of the on-site 10-year flows based upon the existing and proposed conditions utilizing the Civil Design Software, Rational Tabling program for Riverside County.
3. Preparation of hydrology maps.
4. Preparation of the drainage report.

II. PROJECT DESCRIPTION

The proposed project is located in the City of Menifee, County of Riverside, California. The site is located along the west side of Wheat Street between Ethanac Road to the north, and McLaughlin Road, to the south. The project site is made up of one parcel: APN 330-180-012. The site is bounded by vacant land to the north, Wheat Street to the east, single-family residences to the south, and single-family residences to the west. The existing boundary area is approximately 4.85 acres in size. The parcel is proposed to be developed with an industrial warehouse building with associated parking, hardscape, landscape, and access. A proposed street dedication for Wheat Street will bring the total net project area to approximately 4.72 acres.

III. DRAINAGE AREA OVERVIEW

Existing Condition

The project site is currently occupied and developed. APN 330-180-012 is currently developed with a single family residence. Existing improvements to the parcel will be removed as part of the project. Topographically, site elevations range from approximately 1448.00 feet to 1439.00 feet above Mean Sea Level (MSL). The project site generally drains from the south to the north at an approximate grade of 2.40%. The neighboring parcels to the south of the project and to the north of the development on the north side of Corsica Lane contribute tributary flows to the site, and those flows will be analyzed in this study. Off site flows will bypass the site via a proposed concrete ditch that will convey flows around the site to their historic flow paths.

Proposed Condition

Upon development, the site will have one drainage area, denoted in this study as area A1. Flows generated by the site will be directed to one of two proposed drop inlets via sheet flow, ribbon gutter and curb & gutter. One inlet is located on the west side of the project, and one is located on the north side of the truck court. The proposed inlet on the west side of the site will capture flows from the south and west sides of the project, and the inlet on the north will capture flows from the east and north sides of the site. The proposed drop inlets will direct flows to a proposed underground detention basin located under the drive aisle along the north side of the site. The proposed basin is sized preliminarily to contain the difference between the existing and proposed 2-year, 24-hour storm event, which exceeds the difference between existing and proposed 10-year storm. Flows from the proposed underground basin will be directed to a proposed sump and pump that will pump flows to a proposed Modular Wetland system for water quality purposes at a rate optimal for the Modular Wetland system. Treated flows will discharge the system and be directed to another proposed sump and pump where flows will be pumped to a proposed under sidewalk drain for flows to enter Wheat Street right of way. In the event the basin reaches capacity, minor ponding will occur on the north side of the site before flows overtop the curb and continue north as flows do historically.

Off-Site

Tributary flows from the south end just north of Corsica Lane, which is being improved as part of a proposed industrial development. As seen on Exhibit C, the analysis for off-site flows was broken up into two separate areas (B1 and B2) as a ridge forms on the north side of the project site. As seen in Appendix E, the peak flow rate generated from the off-site area tributary to the site during the 100-year storm does not exceed 11.97 CFS. The proposed concrete channel adjacent to the southerly project boundary will have a high point at the location where flows begin breaking off either easterly or westerly to maintain the historic flow pattern. Flows directed westerly in the channel will then be directed north along the westerly property line before discharging flows to APN 330-180-013. Flows directed easterly in the channel will then be directed north via storm drain along Wheat Street right of way before discharging to a proposed under sidewalk drain to Wheat Street.

IV. HYDROLOGY

The Riverside County Hydrology Manual (RCFC&WCD) was used to develop the hydrologic parameters for the hydrology analysis. In addition, Hydrologic Soil Groups (HSG) were determined using the Natural Resources Conservation Service Web Soil Survey. The study area consists of soil type “D” (see Appendix F).

The Rational Method was used to determine the times of concentration under the existing and proposed conditions for use in the Unit Hydrograph Method calculations.

Computations were performed using the RSBC computer program developed by Civil Cadd/Civil Design Engineering Software.

V. RESULTS

For preliminary sizing of the proposed underground detention basin, a unit hydrograph analysis was performed for the 2-year, 24-hour storm and the10-year, 24-hour storm event for both the existing condition and proposed condition. Calculations can be found in Appendix C and Appendix D. Results of the analysis are found below in Table 5-1 and 5-2 respectively. The difference in runoff volume for the 10-year existing and proposed condition is 0.39 acre-feet, which is approximately 18,000 cubic feet. The 10-year storm for the proposed condition has a peak flow rate of 1.94 cfs compared to the existing condition of 1.80 cfs. The difference in runoff volume for the 2-year existing and proposed condition is 0.54 acre-feet, which is approximately 24,000 cubic feet. The proposed basin is designed for the 2-year storm.

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_{10} (cfs)	V_{10} (ac-ft)
Existing	4.72	1.80	0.73
Proposed	4.72	1.94	1.12

Table 5-1: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results (10-year storm)

Unit Hydrograph			
Condition	Drainage Area (acre)	Q_2 (cfs)	V_2 (ac-ft)
Existing	4.72	0.49	0.12
Proposed	4.72	1.08	0.66

Table 5-2: Existing & Proposed Condition Unit Hydrograph Method Hydrology Results (HCOC)

VI. STUDY FINDINGS

The proposed basin will help reduce runoff volume during large storms and also help mitigate for increased peak flow rate caused by the development. Post-development flows will enter the underground basin via drop inlet. Flows from the basin will be treated by a proposed modular wetlands unit, and treated flows will be discharged from the modular wetlands to Wheat Street right of way.

VII. CONCLUSION

The proposed underground basin has been sized to detain the difference in volume between the existing condition and the proposed condition for the 10-year, 24-hour storm event. The basin will help reduce flood volume leaving the site and help mitigate post-development

flow rates. Flows captured onsite will be directed to the proposed modular wetlands system for water quality purposes and discharge into the right of way. Off site flows will be directed around the site to their historic flow paths

VIII. REFERENCES

1. Riverside County; *Riverside County Flood Control & Water Conservation District Hydrology Manual*, April 1978.
2. National Resources Conservation Service; Web Soil Survey. September 13, 2021.
3. NOAA's National Weather Service; NOAA Atlas 14, Volume 6, Version 2. December 14, 2021

FIGURE 1: REGIONAL VICINITY MAP



FIGURE 2: LOCAL VICINITY MAP

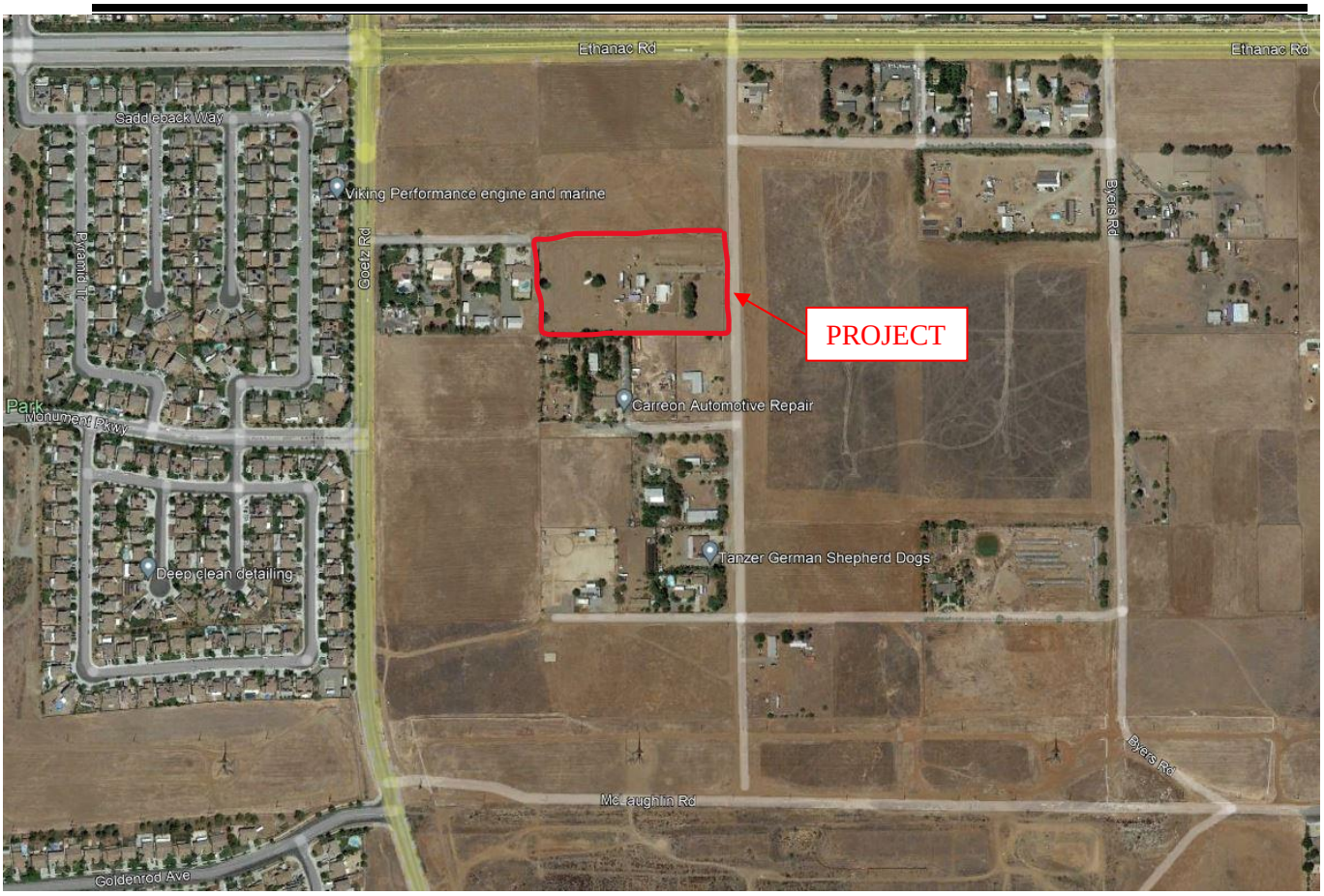
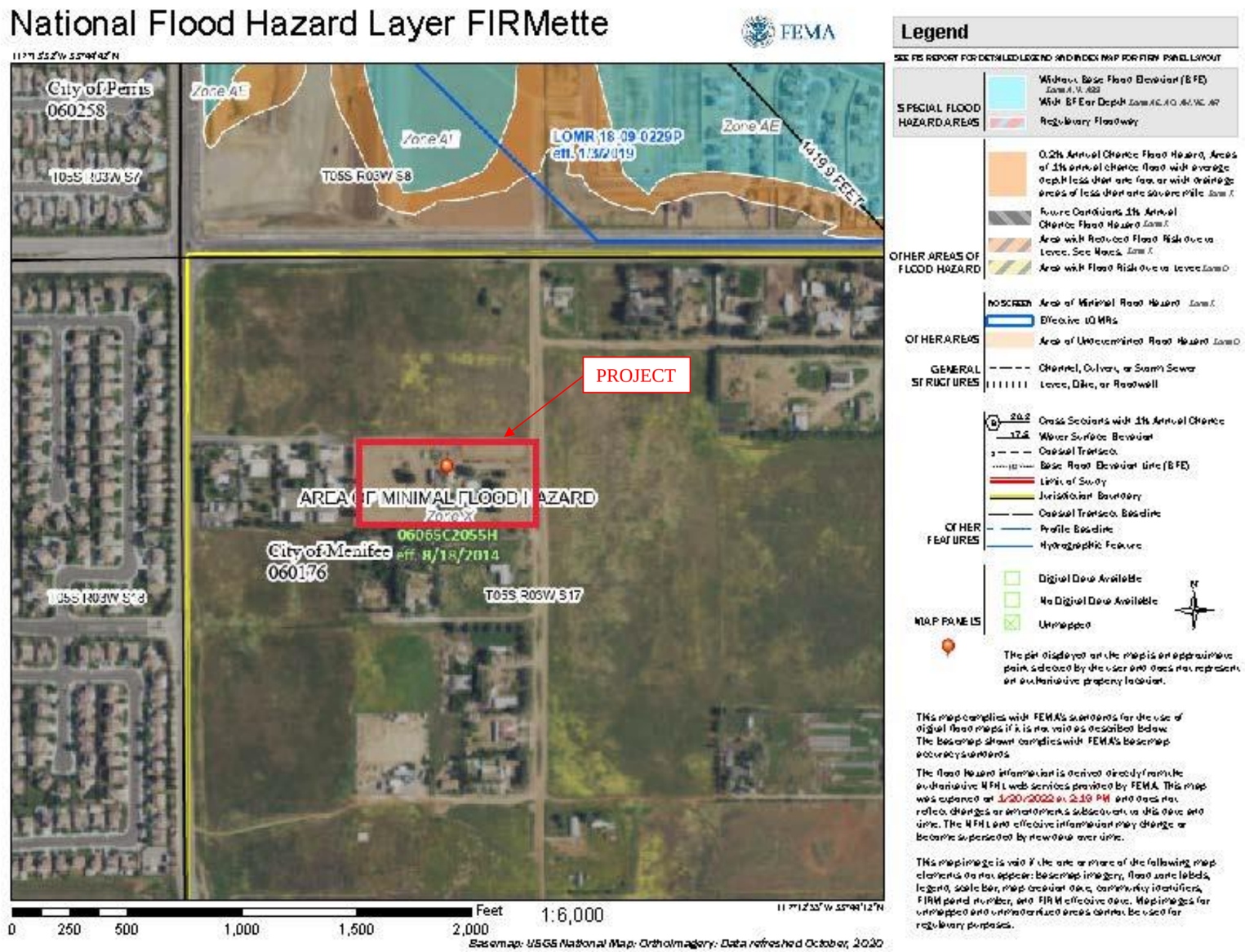


FIGURE 3: FEMA FLOODPLAIN MAP



APPENDIX A

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (RATIONAL METHOD)

APPENDIX A.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/15/22 File:10.out

1494-0012 WHEAT STREET INDUSTRIAL
10 YEAR STORM EVENT
PRE DEVELOPMENT

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

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

Program License Serial Number 6522

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 370.000(Ft.)
Top (of initial area) elevation = 47.100(Ft.)
Bottom (of initial area) elevation = 40.200(Ft.)
Difference in elevation = 6.900(Ft.)
Slope = 0.01865 s(percent)= 1.86
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 12.515 min.

```
Rainfall intensity =      1.681(In/Hr) for a    10.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.820
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  89.00
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      6.505(CFS)
Total initial stream area =        4.720(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            4.72 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

APPENDIX B

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (RATIONAL METHOD)

APPENDIX B.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 06/15/22 File:10.out

1494-0012 WHEAT STREET INDUSTRIAL
10 YEAR STORM EVENT
POST DEVELOPMENT

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

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

Program License Serial Number 6522

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

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 10.0
Calculated rainfall intensity data:
1 hour intensity = 0.780(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 611.000(Ft.)
Top (of initial area) elevation = 46.200(Ft.)
Bottom (of initial area) elevation = 41.800(Ft.)
Difference in elevation = 4.400(Ft.)
Slope = 0.00720 s(percent)= 0.72
TC = k(0.300)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 10.473 min.

```
Rainfall intensity =      1.835(In/Hr) for a    10.0 year storm
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 = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 2)  =  75.00
Pervious area fraction =  0.100; Impervious fraction =  0.900
Initial subarea runoff =      7.642(CFS)
Total initial stream area =        4.720(Ac.)
Pervious area fraction = 0.100
End of computations, total study area =            4.72 (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 =  75.0
```

APPENDIX C

ON-SITE HYDROLOGY BASED ON EXISTING CONDITION (UNIT HYDROGRAPH)

APPENDIX C.1

10-YEAR HYDROLOGY CALCULATIONS (EXISTING)

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 06/15/22 File: 102410.out

++

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

Program License Serial Number 6522

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

English Units used in output format

1494-0012 WHEAT STREET INDUSTRIAL
10-YEAR, 24-HOUR STORM EVENT
PRE DEVELOPMENT
A1

Drainage Area = 4.72(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.72(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.125 Hr.
Lag time = 7.51 Min.
25% of lag time = 1.88 Min.
40% of lag time = 3.00 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]
4.72	2.06	9.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.72	5.32	25.11

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.401(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 3.401(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.720	93.00	0.027

Total Area Entered = 4.72(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
93.0	93.0	0.091	0.027	0.089	1.000	0.089
					Sum (F) =	0.089

Area averaged mean soil loss (F) (In/Hr) = 0.089
Minimum soil loss rate ((In/Hr)) = 0.044
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	66.560	9.763	0.464
2	0.167	133.120	38.207	1.817
3	0.250	199.681	24.334	1.158
4	0.333	266.241	9.372	0.446
5	0.417	332.801	5.683	0.270
6	0.500	399.361	3.813	0.181
7	0.583	465.921	2.569	0.122
8	0.667	532.481	1.972	0.094
9	0.750	599.042	1.462	0.070
10	0.833	665.602	1.071	0.051
11	0.917	732.162	0.744	0.035
12	1.000	798.722	0.666	0.032
13	1.083	865.282	0.346	0.016
			Sum = 100.000	Sum= 4.757

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.157)	0.024	0.003
2	0.17	0.07	0.027	(0.157)	0.024	0.003
3	0.25	0.07	0.027	(0.156)	0.024	0.003
4	0.33	0.10	0.041	(0.156)	0.037	0.004
5	0.42	0.10	0.041	(0.155)	0.037	0.004
6	0.50	0.10	0.041	(0.154)	0.037	0.004
7	0.58	0.10	0.041	(0.154)	0.037	0.004
8	0.67	0.10	0.041	(0.153)	0.037	0.004
9	0.75	0.10	0.041	(0.153)	0.037	0.004
10	0.83	0.13	0.054	(0.152)	0.049	0.005
11	0.92	0.13	0.054	(0.151)	0.049	0.005
12	1.00	0.13	0.054	(0.151)	0.049	0.005

13	1.08	0.10	0.041	(0.150)	0.037	0.004
14	1.17	0.10	0.041	(0.150)	0.037	0.004
15	1.25	0.10	0.041	(0.149)	0.037	0.004
16	1.33	0.10	0.041	(0.148)	0.037	0.004
17	1.42	0.10	0.041	(0.148)	0.037	0.004
18	1.50	0.10	0.041	(0.147)	0.037	0.004
19	1.58	0.10	0.041	(0.147)	0.037	0.004
20	1.67	0.10	0.041	(0.146)	0.037	0.004
21	1.75	0.10	0.041	(0.145)	0.037	0.004
22	1.83	0.13	0.054	(0.145)	0.049	0.005
23	1.92	0.13	0.054	(0.144)	0.049	0.005
24	2.00	0.13	0.054	(0.144)	0.049	0.005
25	2.08	0.13	0.054	(0.143)	0.049	0.005
26	2.17	0.13	0.054	(0.143)	0.049	0.005
27	2.25	0.13	0.054	(0.142)	0.049	0.005
28	2.33	0.13	0.054	(0.141)	0.049	0.005
29	2.42	0.13	0.054	(0.141)	0.049	0.005
30	2.50	0.13	0.054	(0.140)	0.049	0.005
31	2.58	0.17	0.068	(0.140)	0.061	0.007
32	2.67	0.17	0.068	(0.139)	0.061	0.007
33	2.75	0.17	0.068	(0.139)	0.061	0.007
34	2.83	0.17	0.068	(0.138)	0.061	0.007
35	2.92	0.17	0.068	(0.137)	0.061	0.007
36	3.00	0.17	0.068	(0.137)	0.061	0.007
37	3.08	0.17	0.068	(0.136)	0.061	0.007
38	3.17	0.17	0.068	(0.136)	0.061	0.007
39	3.25	0.17	0.068	(0.135)	0.061	0.007
40	3.33	0.17	0.068	(0.135)	0.061	0.007
41	3.42	0.17	0.068	(0.134)	0.061	0.007
42	3.50	0.17	0.068	(0.133)	0.061	0.007
43	3.58	0.17	0.068	(0.133)	0.061	0.007
44	3.67	0.17	0.068	(0.132)	0.061	0.007
45	3.75	0.17	0.068	(0.132)	0.061	0.007
46	3.83	0.20	0.082	(0.131)	0.073	0.008
47	3.92	0.20	0.082	(0.131)	0.073	0.008
48	4.00	0.20	0.082	(0.130)	0.073	0.008
49	4.08	0.20	0.082	(0.130)	0.073	0.008
50	4.17	0.20	0.082	(0.129)	0.073	0.008
51	4.25	0.20	0.082	(0.128)	0.073	0.008
52	4.33	0.23	0.095	(0.128)	0.086	0.010
53	4.42	0.23	0.095	(0.127)	0.086	0.010
54	4.50	0.23	0.095	(0.127)	0.086	0.010
55	4.58	0.23	0.095	(0.126)	0.086	0.010
56	4.67	0.23	0.095	(0.126)	0.086	0.010
57	4.75	0.23	0.095	(0.125)	0.086	0.010
58	4.83	0.27	0.109	(0.125)	0.098	0.011
59	4.92	0.27	0.109	(0.124)	0.098	0.011
60	5.00	0.27	0.109	(0.124)	0.098	0.011
61	5.08	0.20	0.082	(0.123)	0.073	0.008
62	5.17	0.20	0.082	(0.122)	0.073	0.008
63	5.25	0.20	0.082	(0.122)	0.073	0.008
64	5.33	0.23	0.095	(0.121)	0.086	0.010
65	5.42	0.23	0.095	(0.121)	0.086	0.010
66	5.50	0.23	0.095	(0.120)	0.086	0.010
67	5.58	0.27	0.109	(0.120)	0.098	0.011
68	5.67	0.27	0.109	(0.119)	0.098	0.011
69	5.75	0.27	0.109	(0.119)	0.098	0.011
70	5.83	0.27	0.109	(0.118)	0.098	0.011
71	5.92	0.27	0.109	(0.118)	0.098	0.011
72	6.00	0.27	0.109	(0.117)	0.098	0.011

73	6.08	0.30	0.122	(	0.117)	0.110		0.012
74	6.17	0.30	0.122	(	0.116)	0.110		0.012
75	6.25	0.30	0.122	(	0.116)	0.110		0.012
76	6.33	0.30	0.122	(	0.115)	0.110		0.012
77	6.42	0.30	0.122	(	0.115)	0.110		0.012
78	6.50	0.30	0.122	(	0.114)	0.110		0.012
79	6.58	0.33	0.136		0.114	(0.122)		0.022
80	6.67	0.33	0.136		0.113	(0.122)		0.023
81	6.75	0.33	0.136		0.113	(0.122)		0.023
82	6.83	0.33	0.136		0.112	(0.122)		0.024
83	6.92	0.33	0.136		0.112	(0.122)		0.024
84	7.00	0.33	0.136		0.111	(0.122)		0.025
85	7.08	0.33	0.136		0.111	(0.122)		0.026
86	7.17	0.33	0.136		0.110	(0.122)		0.026
87	7.25	0.33	0.136		0.110	(0.122)		0.027
88	7.33	0.37	0.150		0.109	(0.135)		0.041
89	7.42	0.37	0.150		0.109	(0.135)		0.041
90	7.50	0.37	0.150		0.108	(0.135)		0.042
91	7.58	0.40	0.163		0.108	(0.147)		0.056
92	7.67	0.40	0.163		0.107	(0.147)		0.056
93	7.75	0.40	0.163		0.107	(0.147)		0.057
94	7.83	0.43	0.177		0.106	(0.159)		0.071
95	7.92	0.43	0.177		0.106	(0.159)		0.071
96	8.00	0.43	0.177		0.105	(0.159)		0.072
97	8.08	0.50	0.204		0.105	(0.184)		0.099
98	8.17	0.50	0.204		0.104	(0.184)		0.100
99	8.25	0.50	0.204		0.104	(0.184)		0.100
100	8.33	0.50	0.204		0.103	(0.184)		0.101
101	8.42	0.50	0.204		0.103	(0.184)		0.101
102	8.50	0.50	0.204		0.102	(0.184)		0.102
103	8.58	0.53	0.218		0.102	(0.196)		0.116
104	8.67	0.53	0.218		0.101	(0.196)		0.116
105	8.75	0.53	0.218		0.101	(0.196)		0.117
106	8.83	0.57	0.231		0.100	(0.208)		0.131
107	8.92	0.57	0.231		0.100	(0.208)		0.131
108	9.00	0.57	0.231		0.099	(0.208)		0.132
109	9.08	0.63	0.258		0.099	(0.233)		0.160
110	9.17	0.63	0.258		0.098	(0.233)		0.160
111	9.25	0.63	0.258		0.098	(0.233)		0.161
112	9.33	0.67	0.272		0.097	(0.245)		0.175
113	9.42	0.67	0.272		0.097	(0.245)		0.175
114	9.50	0.67	0.272		0.097	(0.245)		0.176
115	9.58	0.70	0.286		0.096	(0.257)		0.190
116	9.67	0.70	0.286		0.096	(0.257)		0.190
117	9.75	0.70	0.286		0.095	(0.257)		0.191
118	9.83	0.73	0.299		0.095	(0.269)		0.205
119	9.92	0.73	0.299		0.094	(0.269)		0.205
120	10.00	0.73	0.299		0.094	(0.269)		0.206
121	10.08	0.50	0.204		0.093	(0.184)		0.111
122	10.17	0.50	0.204		0.093	(0.184)		0.111
123	10.25	0.50	0.204		0.092	(0.184)		0.112
124	10.33	0.50	0.204		0.092	(0.184)		0.112
125	10.42	0.50	0.204		0.092	(0.184)		0.113
126	10.50	0.50	0.204		0.091	(0.184)		0.113
127	10.58	0.67	0.272		0.091	(0.245)		0.181
128	10.67	0.67	0.272		0.090	(0.245)		0.182
129	10.75	0.67	0.272		0.090	(0.245)		0.182
130	10.83	0.67	0.272		0.089	(0.245)		0.183
131	10.92	0.67	0.272		0.089	(0.245)		0.183
132	11.00	0.67	0.272		0.088	(0.245)		0.184

133	11.08	0.63	0.258	0.088	(0.233)	0.171
134	11.17	0.63	0.258	0.088	(0.233)	0.171
135	11.25	0.63	0.258	0.087	(0.233)	0.171
136	11.33	0.63	0.258	0.087	(0.233)	0.172
137	11.42	0.63	0.258	0.086	(0.233)	0.172
138	11.50	0.63	0.258	0.086	(0.233)	0.173
139	11.58	0.57	0.231	0.085	(0.208)	0.146
140	11.67	0.57	0.231	0.085	(0.208)	0.146
141	11.75	0.57	0.231	0.085	(0.208)	0.147
142	11.83	0.60	0.245	0.084	(0.220)	0.161
143	11.92	0.60	0.245	0.084	(0.220)	0.161
144	12.00	0.60	0.245	0.083	(0.220)	0.162
145	12.08	0.83	0.340	0.083	(0.306)	0.257
146	12.17	0.83	0.340	0.082	(0.306)	0.258
147	12.25	0.83	0.340	0.082	(0.306)	0.258
148	12.33	0.87	0.354	0.082	(0.318)	0.272
149	12.42	0.87	0.354	0.081	(0.318)	0.272
150	12.50	0.87	0.354	0.081	(0.318)	0.273
151	12.58	0.93	0.381	0.080	(0.343)	0.301
152	12.67	0.93	0.381	0.080	(0.343)	0.301
153	12.75	0.93	0.381	0.080	(0.343)	0.301
154	12.83	0.97	0.395	0.079	(0.355)	0.315
155	12.92	0.97	0.395	0.079	(0.355)	0.316
156	13.00	0.97	0.395	0.078	(0.355)	0.316
157	13.08	1.13	0.463	0.078	(0.416)	0.385
158	13.17	1.13	0.463	0.078	(0.416)	0.385
159	13.25	1.13	0.463	0.077	(0.416)	0.385
160	13.33	1.13	0.463	0.077	(0.416)	0.386
161	13.42	1.13	0.463	0.076	(0.416)	0.386
162	13.50	1.13	0.463	0.076	(0.416)	0.387
163	13.58	0.77	0.313	0.076	(0.282)	0.237
164	13.67	0.77	0.313	0.075	(0.282)	0.238
165	13.75	0.77	0.313	0.075	(0.282)	0.238
166	13.83	0.77	0.313	0.075	(0.282)	0.238
167	13.92	0.77	0.313	0.074	(0.282)	0.239
168	14.00	0.77	0.313	0.074	(0.282)	0.239
169	14.08	0.90	0.367	0.073	(0.331)	0.294
170	14.17	0.90	0.367	0.073	(0.331)	0.294
171	14.25	0.90	0.367	0.073	(0.331)	0.295
172	14.33	0.87	0.354	0.072	(0.318)	0.281
173	14.42	0.87	0.354	0.072	(0.318)	0.282
174	14.50	0.87	0.354	0.072	(0.318)	0.282
175	14.58	0.87	0.354	0.071	(0.318)	0.283
176	14.67	0.87	0.354	0.071	(0.318)	0.283
177	14.75	0.87	0.354	0.070	(0.318)	0.283
178	14.83	0.83	0.340	0.070	(0.306)	0.270
179	14.92	0.83	0.340	0.070	(0.306)	0.270
180	15.00	0.83	0.340	0.069	(0.306)	0.271
181	15.08	0.80	0.327	0.069	(0.294)	0.258
182	15.17	0.80	0.327	0.069	(0.294)	0.258
183	15.25	0.80	0.327	0.068	(0.294)	0.258
184	15.33	0.77	0.313	0.068	(0.282)	0.245
185	15.42	0.77	0.313	0.068	(0.282)	0.245
186	15.50	0.77	0.313	0.067	(0.282)	0.246
187	15.58	0.63	0.258	0.067	(0.233)	0.192
188	15.67	0.63	0.258	0.067	(0.233)	0.192
189	15.75	0.63	0.258	0.066	(0.233)	0.192
190	15.83	0.63	0.258	0.066	(0.233)	0.193
191	15.92	0.63	0.258	0.066	(0.233)	0.193
192	16.00	0.63	0.258	0.065	(0.233)	0.193

193	16.08	0.13	0.054	(0.065)	0.049	0.005
194	16.17	0.13	0.054	(0.065)	0.049	0.005
195	16.25	0.13	0.054	(0.064)	0.049	0.005
196	16.33	0.13	0.054	(0.064)	0.049	0.005
197	16.42	0.13	0.054	(0.064)	0.049	0.005
198	16.50	0.13	0.054	(0.063)	0.049	0.005
199	16.58	0.10	0.041	(0.063)	0.037	0.004
200	16.67	0.10	0.041	(0.063)	0.037	0.004
201	16.75	0.10	0.041	(0.062)	0.037	0.004
202	16.83	0.10	0.041	(0.062)	0.037	0.004
203	16.92	0.10	0.041	(0.062)	0.037	0.004
204	17.00	0.10	0.041	(0.061)	0.037	0.004
205	17.08	0.17	0.068	0.061	(0.061)	0.007
206	17.17	0.17	0.068	0.061	(0.061)	0.007
207	17.25	0.17	0.068	0.060	(0.061)	0.008
208	17.33	0.17	0.068	0.060	(0.061)	0.008
209	17.42	0.17	0.068	0.060	(0.061)	0.008
210	17.50	0.17	0.068	0.060	(0.061)	0.009
211	17.58	0.17	0.068	0.059	(0.061)	0.009
212	17.67	0.17	0.068	0.059	(0.061)	0.009
213	17.75	0.17	0.068	0.059	(0.061)	0.009
214	17.83	0.13	0.054	(0.058)	0.049	0.005
215	17.92	0.13	0.054	(0.058)	0.049	0.005
216	18.00	0.13	0.054	(0.058)	0.049	0.005
217	18.08	0.13	0.054	(0.057)	0.049	0.005
218	18.17	0.13	0.054	(0.057)	0.049	0.005
219	18.25	0.13	0.054	(0.057)	0.049	0.005
220	18.33	0.13	0.054	(0.057)	0.049	0.005
221	18.42	0.13	0.054	(0.056)	0.049	0.005
222	18.50	0.13	0.054	(0.056)	0.049	0.005
223	18.58	0.10	0.041	(0.056)	0.037	0.004
224	18.67	0.10	0.041	(0.056)	0.037	0.004
225	18.75	0.10	0.041	(0.055)	0.037	0.004
226	18.83	0.07	0.027	(0.055)	0.024	0.003
227	18.92	0.07	0.027	(0.055)	0.024	0.003
228	19.00	0.07	0.027	(0.054)	0.024	0.003
229	19.08	0.10	0.041	(0.054)	0.037	0.004
230	19.17	0.10	0.041	(0.054)	0.037	0.004
231	19.25	0.10	0.041	(0.054)	0.037	0.004
232	19.33	0.13	0.054	(0.053)	0.049	0.005
233	19.42	0.13	0.054	(0.053)	0.049	0.005
234	19.50	0.13	0.054	(0.053)	0.049	0.005
235	19.58	0.10	0.041	(0.053)	0.037	0.004
236	19.67	0.10	0.041	(0.052)	0.037	0.004
237	19.75	0.10	0.041	(0.052)	0.037	0.004
238	19.83	0.07	0.027	(0.052)	0.024	0.003
239	19.92	0.07	0.027	(0.052)	0.024	0.003
240	20.00	0.07	0.027	(0.052)	0.024	0.003
241	20.08	0.10	0.041	(0.051)	0.037	0.004
242	20.17	0.10	0.041	(0.051)	0.037	0.004
243	20.25	0.10	0.041	(0.051)	0.037	0.004
244	20.33	0.10	0.041	(0.051)	0.037	0.004
245	20.42	0.10	0.041	(0.050)	0.037	0.004
246	20.50	0.10	0.041	(0.050)	0.037	0.004
247	20.58	0.10	0.041	(0.050)	0.037	0.004
248	20.67	0.10	0.041	(0.050)	0.037	0.004
249	20.75	0.10	0.041	(0.050)	0.037	0.004
250	20.83	0.07	0.027	(0.049)	0.024	0.003
251	20.92	0.07	0.027	(0.049)	0.024	0.003
252	21.00	0.07	0.027	(0.049)	0.024	0.003

253	21.08	0.10	0.041	(0.049)	0.037	0.004
254	21.17	0.10	0.041	(0.049)	0.037	0.004
255	21.25	0.10	0.041	(0.048)	0.037	0.004
256	21.33	0.07	0.027	(0.048)	0.024	0.003
257	21.42	0.07	0.027	(0.048)	0.024	0.003
258	21.50	0.07	0.027	(0.048)	0.024	0.003
259	21.58	0.10	0.041	(0.048)	0.037	0.004
260	21.67	0.10	0.041	(0.048)	0.037	0.004
261	21.75	0.10	0.041	(0.047)	0.037	0.004
262	21.83	0.07	0.027	(0.047)	0.024	0.003
263	21.92	0.07	0.027	(0.047)	0.024	0.003
264	22.00	0.07	0.027	(0.047)	0.024	0.003
265	22.08	0.10	0.041	(0.047)	0.037	0.004
266	22.17	0.10	0.041	(0.047)	0.037	0.004
267	22.25	0.10	0.041	(0.046)	0.037	0.004
268	22.33	0.07	0.027	(0.046)	0.024	0.003
269	22.42	0.07	0.027	(0.046)	0.024	0.003
270	22.50	0.07	0.027	(0.046)	0.024	0.003
271	22.58	0.07	0.027	(0.046)	0.024	0.003
272	22.67	0.07	0.027	(0.046)	0.024	0.003
273	22.75	0.07	0.027	(0.046)	0.024	0.003
274	22.83	0.07	0.027	(0.045)	0.024	0.003
275	22.92	0.07	0.027	(0.045)	0.024	0.003
276	23.00	0.07	0.027	(0.045)	0.024	0.003
277	23.08	0.07	0.027	(0.045)	0.024	0.003
278	23.17	0.07	0.027	(0.045)	0.024	0.003
279	23.25	0.07	0.027	(0.045)	0.024	0.003
280	23.33	0.07	0.027	(0.045)	0.024	0.003
281	23.42	0.07	0.027	(0.045)	0.024	0.003
282	23.50	0.07	0.027	(0.045)	0.024	0.003
283	23.58	0.07	0.027	(0.045)	0.024	0.003
284	23.67	0.07	0.027	(0.045)	0.024	0.003
285	23.75	0.07	0.027	(0.045)	0.024	0.003
286	23.83	0.07	0.027	(0.044)	0.024	0.003
287	23.92	0.07	0.027	(0.044)	0.024	0.003
288	24.00	0.07	0.027	(0.044)	0.024	0.003

(Loss Rate Not Used)

Sum = 100.0 Sum = 22.2

Flood volume = Effective rainfall 1.85(In)
times area 4.7(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 1.55(In)
Total soil loss = 0.610(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 31685.1 Cubic Feet
Total soil loss = 26589.0 Cubic Feet

Peak flow rate of this hydrograph = 1.804(CFS)

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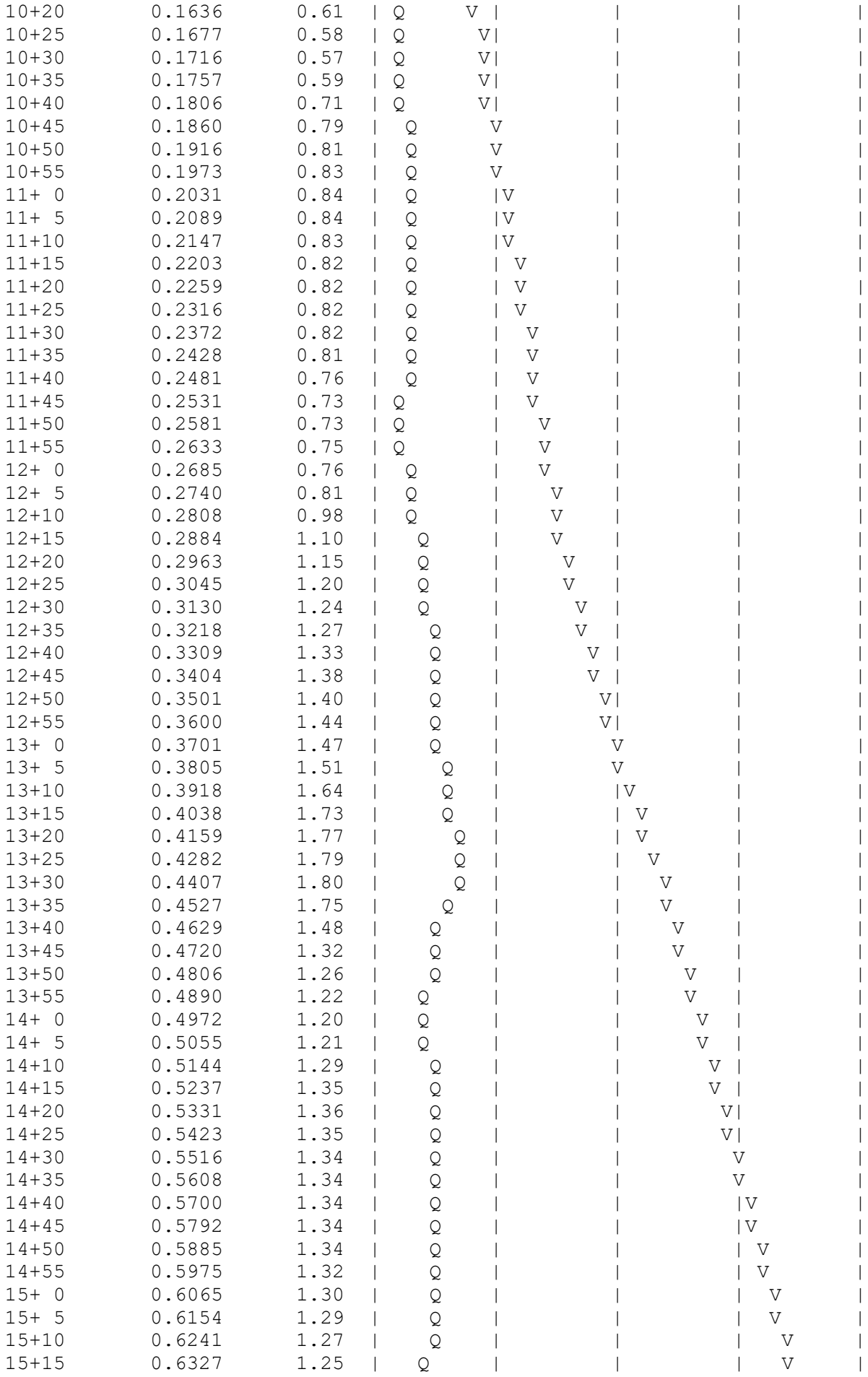
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0001	0.01	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|

0+20	0.0002	0.01	Q	|	|	|	|
0+25	0.0003	0.01	Q	|	|	|	|
0+30	0.0004	0.02	Q	|	|	|	|
0+35	0.0005	0.02	Q	|	|	|	|
0+40	0.0007	0.02	Q	|	|	|	|
0+45	0.0008	0.02	Q	|	|	|	|
0+50	0.0009	0.02	Q	|	|	|	|
0+55	0.0011	0.02	Q	|	|	|	|
1+ 0	0.0012	0.02	Q	|	|	|	|
1+ 5	0.0014	0.02	Q	|	|	|	|
1+10	0.0015	0.02	Q	|	|	|	|
1+15	0.0017	0.02	Q	|	|	|	|
1+20	0.0018	0.02	Q	|	|	|	|
1+25	0.0020	0.02	Q	|	|	|	|
1+30	0.0021	0.02	Q	|	|	|	|
1+35	0.0022	0.02	Q	|	|	|	|
1+40	0.0024	0.02	Q	|	|	|	|
1+45	0.0025	0.02	Q	|	|	|	|
1+50	0.0026	0.02	Q	|	|	|	|
1+55	0.0028	0.02	Q	|	|	|	|
2+ 0	0.0030	0.02	Q	|	|	|	|
2+ 5	0.0031	0.02	Q	|	|	|	|
2+10	0.0033	0.03	Q	|	|	|	|
2+15	0.0035	0.03	Q	|	|	|	|
2+20	0.0037	0.03	Q	|	|	|	|
2+25	0.0038	0.03	Q	|	|	|	|
2+30	0.0040	0.03	Q	|	|	|	|
2+35	0.0042	0.03	Q	|	|	|	|
2+40	0.0044	0.03	Q	|	|	|	|
2+45	0.0046	0.03	Q	|	|	|	|
2+50	0.0048	0.03	Q	|	|	|	|
2+55	0.0050	0.03	Q	|	|	|	|
3+ 0	0.0053	0.03	Q	|	|	|	|
3+ 5	0.0055	0.03	Q	|	|	|	|
3+10	0.0057	0.03	Q	|	|	|	|
3+15	0.0059	0.03	Q	|	|	|	|
3+20	0.0061	0.03	Q	|	|	|	|
3+25	0.0064	0.03	Q	|	|	|	|
3+30	0.0066	0.03	Q	|	|	|	|
3+35	0.0068	0.03	Q	|	|	|	|
3+40	0.0070	0.03	Q	|	|	|	|
3+45	0.0073	0.03	Q	|	|	|	|
3+50	0.0075	0.03	Q	|	|	|	|
3+55	0.0077	0.04	Q	|	|	|	|
4+ 0	0.0080	0.04	Q	|	|	|	|
4+ 5	0.0082	0.04	Q	|	|	|	|
4+10	0.0085	0.04	Q	|	|	|	|
4+15	0.0088	0.04	Q	|	|	|	|
4+20	0.0090	0.04	Q	|	|	|	|
4+25	0.0093	0.04	Q	|	|	|	|
4+30	0.0096	0.04	Q	|	|	|	|
4+35	0.0099	0.04	Q	|	|	|	|
4+40	0.0102	0.04	Q	|	|	|	|
4+45	0.0105	0.04	Q	|	|	|	|
4+50	0.0109	0.05	Q	|	|	|	|
4+55	0.0112	0.05	Q	|	|	|	|
5+ 0	0.0115	0.05	Q	|	|	|	|
5+ 5	0.0119	0.05	Q	|	|	|	|
5+10	0.0122	0.04	Q	|	|	|	|
5+15	0.0125	0.04	Q	|	|	|	|

5+20	0.0127	0.04	Q	|	|	|	|
5+25	0.0130	0.04	Q	|	|	|	|
5+30	0.0134	0.04	Q	|	|	|	|
5+35	0.0137	0.05	Q	|	|	|	|
5+40	0.0140	0.05	Q	|	|	|	|
5+45	0.0143	0.05	Q	|	|	|	|
5+50	0.0147	0.05	Q	|	|	|	|
5+55	0.0150	0.05	Q	|	|	|	|
6+ 0	0.0154	0.05	Q	|	|	|	|
6+ 5	0.0157	0.05	Q	|	|	|	|
6+10	0.0161	0.05	Q	|	|	|	|
6+15	0.0165	0.06	Q	|	|	|	|
6+20	0.0169	0.06	Q	|	|	|	|
6+25	0.0173	0.06	Q	|	|	|	|
6+30	0.0177	0.06	Q	|	|	|	|
6+35	0.0181	0.06	Q	|	|	|	|
6+40	0.0187	0.08	QV	|	|	|	|
6+45	0.0193	0.09	QV	|	|	|	|
6+50	0.0200	0.10	QV	|	|	|	|
6+55	0.0208	0.11	QV	|	|	|	|
7+ 0	0.0215	0.11	QV	|	|	|	|
7+ 5	0.0223	0.11	QV	|	|	|	|
7+10	0.0231	0.12	QV	|	|	|	|
7+15	0.0239	0.12	QV	|	|	|	|
7+20	0.0248	0.13	QV	|	|	|	|
7+25	0.0259	0.16	QV	|	|	|	|
7+30	0.0271	0.17	QV	|	|	|	|
7+35	0.0284	0.19	QV	|	|	|	|
7+40	0.0299	0.22	QV	|	|	|	|
7+45	0.0316	0.24	QV	|	|	|	|
7+50	0.0333	0.26	|Q	|	|	|	|
7+55	0.0353	0.29	|Q	|	|	|	|
8+ 0	0.0375	0.31	|QV	|	|	|	|
8+ 5	0.0398	0.33	|QV	|	|	|	|
8+10	0.0425	0.39	|QV	|	|	|	|
8+15	0.0454	0.43	|QV	|	|	|	|
8+20	0.0485	0.45	|QV	|	|	|	|
8+25	0.0517	0.46	|QV	|	|	|	|
8+30	0.0549	0.47	|Q V	|	|	|	|
8+35	0.0582	0.48	|Q V	|	|	|	|
8+40	0.0617	0.51	| QV	|	|	|	|
8+45	0.0653	0.53	| QV	|	|	|	|
8+50	0.0691	0.55	| QV	|	|	|	|
8+55	0.0731	0.58	| Q V	|	|	|	|
9+ 0	0.0772	0.60	| Q V	|	|	|	|
9+ 5	0.0815	0.62	| Q V	|	|	|	|
9+10	0.0861	0.68	| Q V	|	|	|	|
9+15	0.0911	0.72	| Q V	|	|	|	|
9+20	0.0962	0.74	| Q V	|	|	|	|
9+25	0.1015	0.77	| Q V	|	|	|	|
9+30	0.1070	0.80	| Q V	|	|	|	|
9+35	0.1126	0.82	| Q V	|	|	|	|
9+40	0.1185	0.85	| Q V	|	|	|	|
9+45	0.1245	0.87	| Q V	|	|	|	|
9+50	0.1307	0.89	| Q V	|	|	|	|
9+55	0.1370	0.93	| Q V	|	|	|	|
10+ 0	0.1436	0.95	| Q V	|	|	|	|
10+ 5	0.1499	0.91	| Q V	|	|	|	|
10+10	0.1550	0.75	| Q V	|	|	|	|
10+15	0.1595	0.64	| Q V	|	|	|	|



15+20	0.6412	1.24	| Q	|	|	| V	|
15+25	0.6496	1.21	| Q	|	|	| V	|
15+30	0.6578	1.19	| Q	|	|	| V	|
15+35	0.6658	1.16	| Q	|	|	| V	|
15+40	0.6730	1.06	| Q	|	|	| V	|
15+45	0.6799	0.99	| Q	|	|	| V	|
15+50	0.6865	0.97	| Q	|	|	| V	|
15+55	0.6930	0.95	| Q	|	|	| V	|
16+ 0	0.6995	0.94	| Q	|	|	| V	|
16+ 5	0.7054	0.85	| Q	|	|	| V	|
16+10	0.7088	0.50	| Q	|	|	| V	|
16+15	0.7108	0.28	|Q	|	|	| V	|
16+20	0.7121	0.19	Q	|	|	| V	|
16+25	0.7131	0.14	Q	|	|	| V	|
16+30	0.7138	0.11	Q	|	|	| V	|
16+35	0.7143	0.08	Q	|	|	| V	|
16+40	0.7148	0.06	Q	|	|	| V	|
16+45	0.7151	0.05	Q	|	|	| V	|
16+50	0.7153	0.04	Q	|	|	| V	|
16+55	0.7155	0.03	Q	|	|	| V	|
17+ 0	0.7157	0.02	Q	|	|	| V	|
17+ 5	0.7158	0.02	Q	|	|	| V	|
17+10	0.7160	0.03	Q	|	|	| V	|
17+15	0.7162	0.03	Q	|	|	| V	|
17+20	0.7165	0.03	Q	|	|	| V	|
17+25	0.7167	0.03	Q	|	|	| V	|
17+30	0.7169	0.04	Q	|	|	| V	|
17+35	0.7172	0.04	Q	|	|	| V	|
17+40	0.7175	0.04	Q	|	|	| V	|
17+45	0.7178	0.04	Q	|	|	| V	|
17+50	0.7180	0.04	Q	|	|	| V	|
17+55	0.7183	0.03	Q	|	|	| V	|
18+ 0	0.7185	0.03	Q	|	|	| V	|
18+ 5	0.7187	0.03	Q	|	|	| V	|
18+10	0.7189	0.03	Q	|	|	| V	|
18+15	0.7191	0.03	Q	|	|	| V	|
18+20	0.7193	0.03	Q	|	|	| V	|
18+25	0.7194	0.03	Q	|	|	| V	|
18+30	0.7196	0.03	Q	|	|	| V	|
18+35	0.7198	0.03	Q	|	|	| V	|
18+40	0.7200	0.02	Q	|	|	| V	|
18+45	0.7201	0.02	Q	|	|	| V	|
18+50	0.7202	0.02	Q	|	|	| V	|
18+55	0.7204	0.02	Q	|	|	| V	|
19+ 0	0.7205	0.02	Q	|	|	| V	|
19+ 5	0.7206	0.02	Q	|	|	| V	|
19+10	0.7207	0.02	Q	|	|	| V	|
19+15	0.7208	0.02	Q	|	|	| V	|
19+20	0.7209	0.02	Q	|	|	| V	|
19+25	0.7211	0.02	Q	|	|	| V	|
19+30	0.7213	0.02	Q	|	|	| V	|
19+35	0.7214	0.02	Q	|	|	| V	|
19+40	0.7216	0.02	Q	|	|	| V	|
19+45	0.7217	0.02	Q	|	|	| V	|
19+50	0.7219	0.02	Q	|	|	| V	|
19+55	0.7220	0.02	Q	|	|	| V	|
20+ 0	0.7221	0.02	Q	|	|	| V	|
20+ 5	0.7222	0.02	Q	|	|	| V	|
20+10	0.7223	0.02	Q	|	|	| V	|
20+15	0.7224	0.02	Q	|	|	| V	|

20+20	0.7226	0.02	Q	|	|	|	V|
20+25	0.7227	0.02	Q	|	|	|	V|
20+30	0.7228	0.02	Q	|	|	|	V|
20+35	0.7229	0.02	Q	|	|	|	V|
20+40	0.7231	0.02	Q	|	|	|	V|
20+45	0.7232	0.02	Q	|	|	|	V|
20+50	0.7233	0.02	Q	|	|	|	V|
20+55	0.7234	0.02	Q	|	|	|	V|
21+ 0	0.7236	0.01	Q	|	|	|	V|
21+ 5	0.7237	0.01	Q	|	|	|	V|
21+10	0.7238	0.02	Q	|	|	|	V|
21+15	0.7239	0.02	Q	|	|	|	V|
21+20	0.7240	0.02	Q	|	|	|	V|
21+25	0.7241	0.02	Q	|	|	|	V|
21+30	0.7242	0.01	Q	|	|	|	V|
21+35	0.7243	0.01	Q	|	|	|	V|
21+40	0.7244	0.02	Q	|	|	|	V|
21+45	0.7246	0.02	Q	|	|	|	V|
21+50	0.7247	0.02	Q	|	|	|	V|
21+55	0.7248	0.02	Q	|	|	|	V|
22+ 0	0.7249	0.01	Q	|	|	|	V|
22+ 5	0.7250	0.01	Q	|	|	|	V|
22+10	0.7251	0.02	Q	|	|	|	V|
22+15	0.7252	0.02	Q	|	|	|	V|
22+20	0.7254	0.02	Q	|	|	|	V|
22+25	0.7255	0.02	Q	|	|	|	V|
22+30	0.7256	0.01	Q	|	|	|	V|
22+35	0.7257	0.01	Q	|	|	|	V|
22+40	0.7258	0.01	Q	|	|	|	V|
22+45	0.7258	0.01	Q	|	|	|	V|
22+50	0.7259	0.01	Q	|	|	|	V|
22+55	0.7260	0.01	Q	|	|	|	V|
23+ 0	0.7261	0.01	Q	|	|	|	V|
23+ 5	0.7262	0.01	Q	|	|	|	V|
23+10	0.7263	0.01	Q	|	|	|	V|
23+15	0.7264	0.01	Q	|	|	|	V|
23+20	0.7265	0.01	Q	|	|	|	V|
23+25	0.7266	0.01	Q	|	|	|	V|
23+30	0.7267	0.01	Q	|	|	|	V|
23+35	0.7267	0.01	Q	|	|	|	V|
23+40	0.7268	0.01	Q	|	|	|	V|
23+45	0.7269	0.01	Q	|	|	|	V|
23+50	0.7270	0.01	Q	|	|	|	V|
23+55	0.7271	0.01	Q	|	|	|	V|
24+ 0	0.7272	0.01	Q	|	|	|	V|
24+ 5	0.7273	0.01	Q	|	|	|	V|
24+10	0.7273	0.01	Q	|	|	|	V|
24+15	0.7273	0.00	Q	|	|	|	V|
24+20	0.7274	0.00	Q	|	|	|	V|
24+25	0.7274	0.00	Q	|	|	|	V|
24+30	0.7274	0.00	Q	|	|	|	V|
24+35	0.7274	0.00	Q	|	|	|	V|
24+40	0.7274	0.00	Q	|	|	|	V|
24+45	0.7274	0.00	Q	|	|	|	V|
24+50	0.7274	0.00	Q	|	|	|	V|
24+55	0.7274	0.00	Q	|	|	|	V|
25+ 0	0.7274	0.00	Q	|	|	|	V

APPENDIX C.2

2-YEAR HYDROLOGY CALCULATIONS (EXISTING)

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 06/15/22 File: 2242.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0012 WHEAT STREET INDUSTRIAL
2-YEAR, 24-HOUR STORM EVENT
PRE DEVELOPMENT
HCOC

Drainage Area = 4.72(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.72(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.125 Hr.
Lag time = 7.51 Min.
25% of lag time = 1.88 Min.
40% of lag time = 3.00 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]
4.72	2.06	9.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.72	5.32	25.11

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 2.060(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.060(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.720	93.00	0.027

Total Area Entered = 4.72(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
93.0	83.4	0.205	0.027	0.200	1.000	0.200
					Sum (F) =	0.200

Area averaged mean soil loss (F) (In/Hr) = 0.200
Minimum soil loss rate ((In/Hr)) = 0.100
(for 24 hour storm duration)
Soil low loss rate (decimal) = 0.900

U n i t H y d r o g r a p h
VALLEY S-Curve

Unit Hydrograph Data

Unit time period (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	66.560	9.763	0.464
2	0.167	133.120	38.207	1.817
3	0.250	199.681	24.334	1.158
4	0.333	266.241	9.372	0.446
5	0.417	332.801	5.683	0.270
6	0.500	399.361	3.813	0.181
7	0.583	465.921	2.569	0.122
8	0.667	532.481	1.972	0.094
9	0.750	599.042	1.462	0.070
10	0.833	665.602	1.071	0.051
11	0.917	732.162	0.744	0.035
12	1.000	798.722	0.666	0.032
13	1.083	865.282	0.346	0.016
			Sum = 100.000	Sum= 4.757

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.355)	0.015	0.002
2	0.17	0.07	0.016	(0.354)	0.015	0.002
3	0.25	0.07	0.016	(0.352)	0.015	0.002
4	0.33	0.10	0.025	(0.351)	0.022	0.002
5	0.42	0.10	0.025	(0.350)	0.022	0.002
6	0.50	0.10	0.025	(0.348)	0.022	0.002
7	0.58	0.10	0.025	(0.347)	0.022	0.002
8	0.67	0.10	0.025	(0.345)	0.022	0.002
9	0.75	0.10	0.025	(0.344)	0.022	0.002
10	0.83	0.13	0.033	(0.343)	0.030	0.003
11	0.92	0.13	0.033	(0.341)	0.030	0.003
12	1.00	0.13	0.033	(0.340)	0.030	0.003

13	1.08	0.10	0.025	(0.339)	0.022	0.002
14	1.17	0.10	0.025	(0.337)	0.022	0.002
15	1.25	0.10	0.025	(0.336)	0.022	0.002
16	1.33	0.10	0.025	(0.335)	0.022	0.002
17	1.42	0.10	0.025	(0.333)	0.022	0.002
18	1.50	0.10	0.025	(0.332)	0.022	0.002
19	1.58	0.10	0.025	(0.331)	0.022	0.002
20	1.67	0.10	0.025	(0.329)	0.022	0.002
21	1.75	0.10	0.025	(0.328)	0.022	0.002
22	1.83	0.13	0.033	(0.327)	0.030	0.003
23	1.92	0.13	0.033	(0.325)	0.030	0.003
24	2.00	0.13	0.033	(0.324)	0.030	0.003
25	2.08	0.13	0.033	(0.323)	0.030	0.003
26	2.17	0.13	0.033	(0.321)	0.030	0.003
27	2.25	0.13	0.033	(0.320)	0.030	0.003
28	2.33	0.13	0.033	(0.319)	0.030	0.003
29	2.42	0.13	0.033	(0.318)	0.030	0.003
30	2.50	0.13	0.033	(0.316)	0.030	0.003
31	2.58	0.17	0.041	(0.315)	0.037	0.004
32	2.67	0.17	0.041	(0.314)	0.037	0.004
33	2.75	0.17	0.041	(0.312)	0.037	0.004
34	2.83	0.17	0.041	(0.311)	0.037	0.004
35	2.92	0.17	0.041	(0.310)	0.037	0.004
36	3.00	0.17	0.041	(0.309)	0.037	0.004
37	3.08	0.17	0.041	(0.307)	0.037	0.004
38	3.17	0.17	0.041	(0.306)	0.037	0.004
39	3.25	0.17	0.041	(0.305)	0.037	0.004
40	3.33	0.17	0.041	(0.303)	0.037	0.004
41	3.42	0.17	0.041	(0.302)	0.037	0.004
42	3.50	0.17	0.041	(0.301)	0.037	0.004
43	3.58	0.17	0.041	(0.300)	0.037	0.004
44	3.67	0.17	0.041	(0.298)	0.037	0.004
45	3.75	0.17	0.041	(0.297)	0.037	0.004
46	3.83	0.20	0.049	(0.296)	0.044	0.005
47	3.92	0.20	0.049	(0.295)	0.044	0.005
48	4.00	0.20	0.049	(0.293)	0.044	0.005
49	4.08	0.20	0.049	(0.292)	0.044	0.005
50	4.17	0.20	0.049	(0.291)	0.044	0.005
51	4.25	0.20	0.049	(0.290)	0.044	0.005
52	4.33	0.23	0.058	(0.288)	0.052	0.006
53	4.42	0.23	0.058	(0.287)	0.052	0.006
54	4.50	0.23	0.058	(0.286)	0.052	0.006
55	4.58	0.23	0.058	(0.285)	0.052	0.006
56	4.67	0.23	0.058	(0.284)	0.052	0.006
57	4.75	0.23	0.058	(0.282)	0.052	0.006
58	4.83	0.27	0.066	(0.281)	0.059	0.007
59	4.92	0.27	0.066	(0.280)	0.059	0.007
60	5.00	0.27	0.066	(0.279)	0.059	0.007
61	5.08	0.20	0.049	(0.277)	0.044	0.005
62	5.17	0.20	0.049	(0.276)	0.044	0.005
63	5.25	0.20	0.049	(0.275)	0.044	0.005
64	5.33	0.23	0.058	(0.274)	0.052	0.006
65	5.42	0.23	0.058	(0.273)	0.052	0.006
66	5.50	0.23	0.058	(0.271)	0.052	0.006
67	5.58	0.27	0.066	(0.270)	0.059	0.007
68	5.67	0.27	0.066	(0.269)	0.059	0.007
69	5.75	0.27	0.066	(0.268)	0.059	0.007
70	5.83	0.27	0.066	(0.267)	0.059	0.007
71	5.92	0.27	0.066	(0.266)	0.059	0.007
72	6.00	0.27	0.066	(0.264)	0.059	0.007

73	6.08	0.30	0.074	(0.263)	0.067	0.007
74	6.17	0.30	0.074	(0.262)	0.067	0.007
75	6.25	0.30	0.074	(0.261)	0.067	0.007
76	6.33	0.30	0.074	(0.260)	0.067	0.007
77	6.42	0.30	0.074	(0.258)	0.067	0.007
78	6.50	0.30	0.074	(0.257)	0.067	0.007
79	6.58	0.33	0.082	(0.256)	0.074	0.008
80	6.67	0.33	0.082	(0.255)	0.074	0.008
81	6.75	0.33	0.082	(0.254)	0.074	0.008
82	6.83	0.33	0.082	(0.253)	0.074	0.008
83	6.92	0.33	0.082	(0.252)	0.074	0.008
84	7.00	0.33	0.082	(0.250)	0.074	0.008
85	7.08	0.33	0.082	(0.249)	0.074	0.008
86	7.17	0.33	0.082	(0.248)	0.074	0.008
87	7.25	0.33	0.082	(0.247)	0.074	0.008
88	7.33	0.37	0.091	(0.246)	0.082	0.009
89	7.42	0.37	0.091	(0.245)	0.082	0.009
90	7.50	0.37	0.091	(0.244)	0.082	0.009
91	7.58	0.40	0.099	(0.243)	0.089	0.010
92	7.67	0.40	0.099	(0.241)	0.089	0.010
93	7.75	0.40	0.099	(0.240)	0.089	0.010
94	7.83	0.43	0.107	(0.239)	0.096	0.011
95	7.92	0.43	0.107	(0.238)	0.096	0.011
96	8.00	0.43	0.107	(0.237)	0.096	0.011
97	8.08	0.50	0.124	(0.236)	0.111	0.012
98	8.17	0.50	0.124	(0.235)	0.111	0.012
99	8.25	0.50	0.124	(0.234)	0.111	0.012
100	8.33	0.50	0.124	(0.233)	0.111	0.012
101	8.42	0.50	0.124	(0.232)	0.111	0.012
102	8.50	0.50	0.124	(0.230)	0.111	0.012
103	8.58	0.53	0.132	(0.229)	0.119	0.013
104	8.67	0.53	0.132	(0.228)	0.119	0.013
105	8.75	0.53	0.132	(0.227)	0.119	0.013
106	8.83	0.57	0.140	(0.226)	0.126	0.014
107	8.92	0.57	0.140	(0.225)	0.126	0.014
108	9.00	0.57	0.140	(0.224)	0.126	0.014
109	9.08	0.63	0.157	(0.223)	0.141	0.016
110	9.17	0.63	0.157	(0.222)	0.141	0.016
111	9.25	0.63	0.157	(0.221)	0.141	0.016
112	9.33	0.67	0.165	(0.220)	0.148	0.016
113	9.42	0.67	0.165	(0.219)	0.148	0.016
114	9.50	0.67	0.165	(0.218)	0.148	0.016
115	9.58	0.70	0.173	(0.217)	0.156	0.017
116	9.67	0.70	0.173	(0.216)	0.156	0.017
117	9.75	0.70	0.173	(0.215)	0.156	0.017
118	9.83	0.73	0.181	(0.214)	0.163	0.018
119	9.92	0.73	0.181	(0.212)	0.163	0.018
120	10.00	0.73	0.181	(0.211)	0.163	0.018
121	10.08	0.50	0.124	(0.210)	0.111	0.012
122	10.17	0.50	0.124	(0.209)	0.111	0.012
123	10.25	0.50	0.124	(0.208)	0.111	0.012
124	10.33	0.50	0.124	(0.207)	0.111	0.012
125	10.42	0.50	0.124	(0.206)	0.111	0.012
126	10.50	0.50	0.124	(0.205)	0.111	0.012
127	10.58	0.67	0.165	(0.204)	0.148	0.016
128	10.67	0.67	0.165	(0.203)	0.148	0.016
129	10.75	0.67	0.165	(0.202)	0.148	0.016
130	10.83	0.67	0.165	(0.201)	0.148	0.016
131	10.92	0.67	0.165	(0.200)	0.148	0.016
132	11.00	0.67	0.165	(0.199)	0.148	0.016

133	11.08	0.63	0.157	(0.198)	0.141	0.016
134	11.17	0.63	0.157	(0.197)	0.141	0.016
135	11.25	0.63	0.157	(0.196)	0.141	0.016
136	11.33	0.63	0.157	(0.196)	0.141	0.016
137	11.42	0.63	0.157	(0.195)	0.141	0.016
138	11.50	0.63	0.157	(0.194)	0.141	0.016
139	11.58	0.57	0.140	(0.193)	0.126	0.014
140	11.67	0.57	0.140	(0.192)	0.126	0.014
141	11.75	0.57	0.140	(0.191)	0.126	0.014
142	11.83	0.60	0.148	(0.190)	0.133	0.015
143	11.92	0.60	0.148	(0.189)	0.133	0.015
144	12.00	0.60	0.148	(0.188)	0.133	0.015
145	12.08	0.83	0.206	(0.187)	0.185	0.021
146	12.17	0.83	0.206	(0.186)	0.185	0.021
147	12.25	0.83	0.206	0.185	(0.185)	0.021
148	12.33	0.87	0.214	0.184	(0.193)	0.030
149	12.42	0.87	0.214	0.183	(0.193)	0.031
150	12.50	0.87	0.214	0.182	(0.193)	0.032
151	12.58	0.93	0.231	0.181	(0.208)	0.049
152	12.67	0.93	0.231	0.180	(0.208)	0.050
153	12.75	0.93	0.231	0.180	(0.208)	0.051
154	12.83	0.97	0.239	0.179	(0.215)	0.060
155	12.92	0.97	0.239	0.178	(0.215)	0.061
156	13.00	0.97	0.239	0.177	(0.215)	0.062
157	13.08	1.13	0.280	0.176	(0.252)	0.104
158	13.17	1.13	0.280	0.175	(0.252)	0.105
159	13.25	1.13	0.280	0.174	(0.252)	0.106
160	13.33	1.13	0.280	0.173	(0.252)	0.107
161	13.42	1.13	0.280	0.172	(0.252)	0.108
162	13.50	1.13	0.280	0.172	(0.252)	0.109
163	13.58	0.77	0.190	(0.171)	0.171	0.019
164	13.67	0.77	0.190	0.170	(0.171)	0.020
165	13.75	0.77	0.190	0.169	(0.171)	0.021
166	13.83	0.77	0.190	0.168	(0.171)	0.021
167	13.92	0.77	0.190	0.167	(0.171)	0.022
168	14.00	0.77	0.190	0.166	(0.171)	0.023
169	14.08	0.90	0.222	0.165	(0.200)	0.057
170	14.17	0.90	0.222	0.165	(0.200)	0.058
171	14.25	0.90	0.222	0.164	(0.200)	0.059
172	14.33	0.87	0.214	0.163	(0.193)	0.051
173	14.42	0.87	0.214	0.162	(0.193)	0.052
174	14.50	0.87	0.214	0.161	(0.193)	0.053
175	14.58	0.87	0.214	0.160	(0.193)	0.054
176	14.67	0.87	0.214	0.160	(0.193)	0.055
177	14.75	0.87	0.214	0.159	(0.193)	0.055
178	14.83	0.83	0.206	0.158	(0.185)	0.048
179	14.92	0.83	0.206	0.157	(0.185)	0.049
180	15.00	0.83	0.206	0.156	(0.185)	0.050
181	15.08	0.80	0.198	0.156	(0.178)	0.042
182	15.17	0.80	0.198	0.155	(0.178)	0.043
183	15.25	0.80	0.198	0.154	(0.178)	0.044
184	15.33	0.77	0.190	0.153	(0.171)	0.036
185	15.42	0.77	0.190	0.152	(0.171)	0.037
186	15.50	0.77	0.190	0.152	(0.171)	0.038
187	15.58	0.63	0.157	(0.151)	0.141	0.016
188	15.67	0.63	0.157	(0.150)	0.141	0.016
189	15.75	0.63	0.157	(0.149)	0.141	0.016
190	15.83	0.63	0.157	(0.149)	0.141	0.016
191	15.92	0.63	0.157	(0.148)	0.141	0.016
192	16.00	0.63	0.157	(0.147)	0.141	0.016

193	16.08	0.13	0.033	(0.146)	0.030	0.003
194	16.17	0.13	0.033	(0.146)	0.030	0.003
195	16.25	0.13	0.033	(0.145)	0.030	0.003
196	16.33	0.13	0.033	(0.144)	0.030	0.003
197	16.42	0.13	0.033	(0.143)	0.030	0.003
198	16.50	0.13	0.033	(0.143)	0.030	0.003
199	16.58	0.10	0.025	(0.142)	0.022	0.002
200	16.67	0.10	0.025	(0.141)	0.022	0.002
201	16.75	0.10	0.025	(0.140)	0.022	0.002
202	16.83	0.10	0.025	(0.140)	0.022	0.002
203	16.92	0.10	0.025	(0.139)	0.022	0.002
204	17.00	0.10	0.025	(0.138)	0.022	0.002
205	17.08	0.17	0.041	(0.138)	0.037	0.004
206	17.17	0.17	0.041	(0.137)	0.037	0.004
207	17.25	0.17	0.041	(0.136)	0.037	0.004
208	17.33	0.17	0.041	(0.136)	0.037	0.004
209	17.42	0.17	0.041	(0.135)	0.037	0.004
210	17.50	0.17	0.041	(0.134)	0.037	0.004
211	17.58	0.17	0.041	(0.134)	0.037	0.004
212	17.67	0.17	0.041	(0.133)	0.037	0.004
213	17.75	0.17	0.041	(0.132)	0.037	0.004
214	17.83	0.13	0.033	(0.132)	0.030	0.003
215	17.92	0.13	0.033	(0.131)	0.030	0.003
216	18.00	0.13	0.033	(0.130)	0.030	0.003
217	18.08	0.13	0.033	(0.130)	0.030	0.003
218	18.17	0.13	0.033	(0.129)	0.030	0.003
219	18.25	0.13	0.033	(0.128)	0.030	0.003
220	18.33	0.13	0.033	(0.128)	0.030	0.003
221	18.42	0.13	0.033	(0.127)	0.030	0.003
222	18.50	0.13	0.033	(0.126)	0.030	0.003
223	18.58	0.10	0.025	(0.126)	0.022	0.002
224	18.67	0.10	0.025	(0.125)	0.022	0.002
225	18.75	0.10	0.025	(0.125)	0.022	0.002
226	18.83	0.07	0.016	(0.124)	0.015	0.002
227	18.92	0.07	0.016	(0.123)	0.015	0.002
228	19.00	0.07	0.016	(0.123)	0.015	0.002
229	19.08	0.10	0.025	(0.122)	0.022	0.002
230	19.17	0.10	0.025	(0.122)	0.022	0.002
231	19.25	0.10	0.025	(0.121)	0.022	0.002
232	19.33	0.13	0.033	(0.121)	0.030	0.003
233	19.42	0.13	0.033	(0.120)	0.030	0.003
234	19.50	0.13	0.033	(0.119)	0.030	0.003
235	19.58	0.10	0.025	(0.119)	0.022	0.002
236	19.67	0.10	0.025	(0.118)	0.022	0.002
237	19.75	0.10	0.025	(0.118)	0.022	0.002
238	19.83	0.07	0.016	(0.117)	0.015	0.002
239	19.92	0.07	0.016	(0.117)	0.015	0.002
240	20.00	0.07	0.016	(0.116)	0.015	0.002
241	20.08	0.10	0.025	(0.116)	0.022	0.002
242	20.17	0.10	0.025	(0.115)	0.022	0.002
243	20.25	0.10	0.025	(0.115)	0.022	0.002
244	20.33	0.10	0.025	(0.114)	0.022	0.002
245	20.42	0.10	0.025	(0.114)	0.022	0.002
246	20.50	0.10	0.025	(0.113)	0.022	0.002
247	20.58	0.10	0.025	(0.113)	0.022	0.002
248	20.67	0.10	0.025	(0.112)	0.022	0.002
249	20.75	0.10	0.025	(0.112)	0.022	0.002
250	20.83	0.07	0.016	(0.111)	0.015	0.002
251	20.92	0.07	0.016	(0.111)	0.015	0.002
252	21.00	0.07	0.016	(0.111)	0.015	0.002

253	21.08	0.10	0.025	(0.110)	0.022	0.002
254	21.17	0.10	0.025	(0.110)	0.022	0.002
255	21.25	0.10	0.025	(0.109)	0.022	0.002
256	21.33	0.07	0.016	(0.109)	0.015	0.002
257	21.42	0.07	0.016	(0.108)	0.015	0.002
258	21.50	0.07	0.016	(0.108)	0.015	0.002
259	21.58	0.10	0.025	(0.108)	0.022	0.002
260	21.67	0.10	0.025	(0.107)	0.022	0.002
261	21.75	0.10	0.025	(0.107)	0.022	0.002
262	21.83	0.07	0.016	(0.106)	0.015	0.002
263	21.92	0.07	0.016	(0.106)	0.015	0.002
264	22.00	0.07	0.016	(0.106)	0.015	0.002
265	22.08	0.10	0.025	(0.105)	0.022	0.002
266	22.17	0.10	0.025	(0.105)	0.022	0.002
267	22.25	0.10	0.025	(0.105)	0.022	0.002
268	22.33	0.07	0.016	(0.104)	0.015	0.002
269	22.42	0.07	0.016	(0.104)	0.015	0.002
270	22.50	0.07	0.016	(0.104)	0.015	0.002
271	22.58	0.07	0.016	(0.103)	0.015	0.002
272	22.67	0.07	0.016	(0.103)	0.015	0.002
273	22.75	0.07	0.016	(0.103)	0.015	0.002
274	22.83	0.07	0.016	(0.103)	0.015	0.002
275	22.92	0.07	0.016	(0.102)	0.015	0.002
276	23.00	0.07	0.016	(0.102)	0.015	0.002
277	23.08	0.07	0.016	(0.102)	0.015	0.002
278	23.17	0.07	0.016	(0.102)	0.015	0.002
279	23.25	0.07	0.016	(0.101)	0.015	0.002
280	23.33	0.07	0.016	(0.101)	0.015	0.002
281	23.42	0.07	0.016	(0.101)	0.015	0.002
282	23.50	0.07	0.016	(0.101)	0.015	0.002
283	23.58	0.07	0.016	(0.101)	0.015	0.002
284	23.67	0.07	0.016	(0.101)	0.015	0.002
285	23.75	0.07	0.016	(0.100)	0.015	0.002
286	23.83	0.07	0.016	(0.100)	0.015	0.002
287	23.92	0.07	0.016	(0.100)	0.015	0.002
288	24.00	0.07	0.016	(0.100)	0.015	0.002

(Loss Rate Not Used)

Sum = 100.0 Sum = 3.7

Flood volume = Effective rainfall 0.31(In)
times area 4.7(Ac.)/[(In)/(Ft.)] = 0.1(Ac.Ft)

Total soil loss = 1.75(In)
Total soil loss = 0.689(Ac.Ft)
Total rainfall = 2.06(In)
Flood volume = 5260.7 Cubic Feet
Total soil loss = 30034.2 Cubic Feet

Peak flow rate of this hydrograph = 0.489(CFS)

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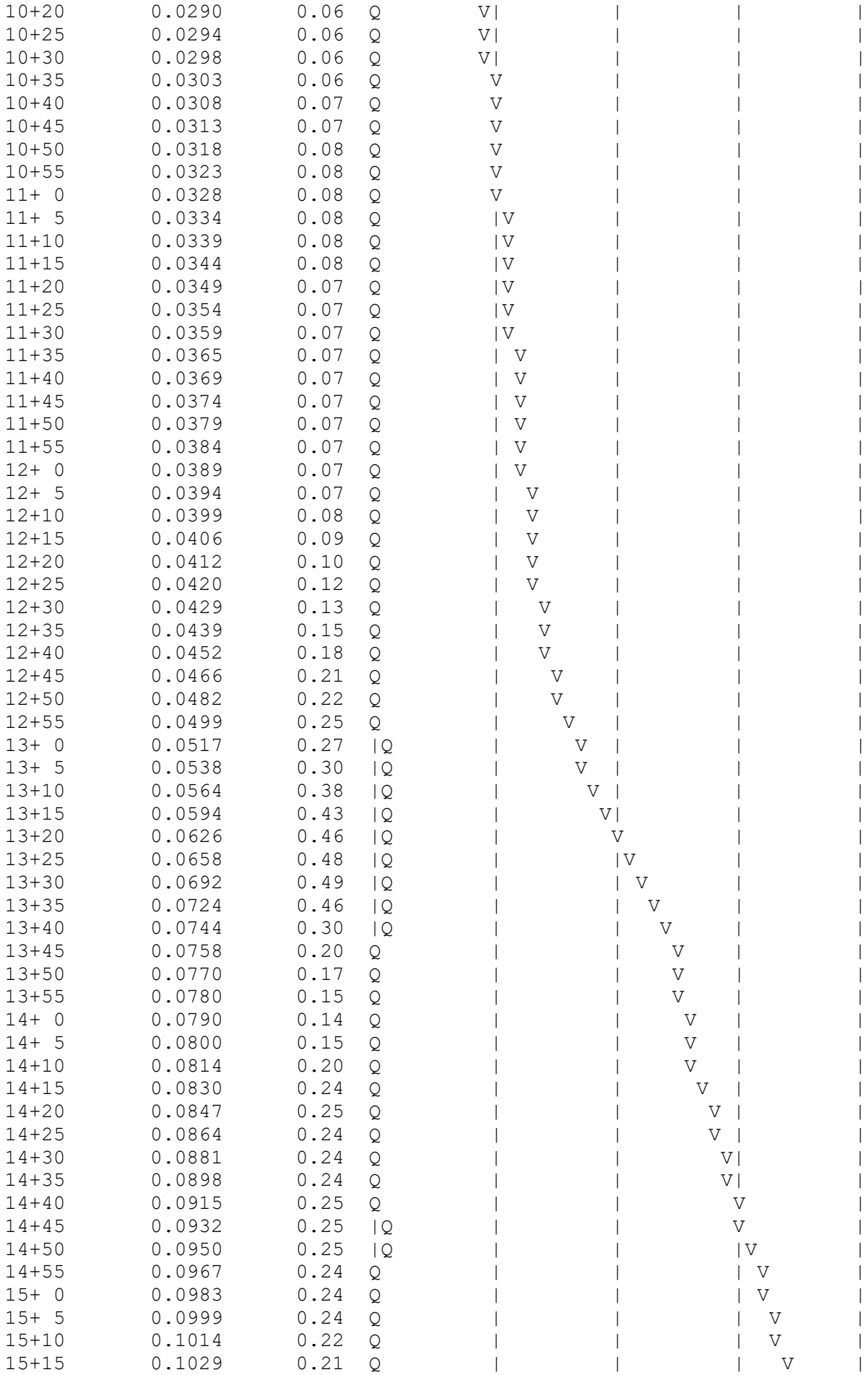
24 - H O U R S T O R M
R u n o f f H y d r o g r a p h

Hydrograph in 5 Minute intervals ((CFS))

Time(h+m)	Volume Ac.Ft	Q(CFS)	0	2.5	5.0	7.5	10.0
0+ 5	0.0000	0.00	Q	|	|	|	|
0+10	0.0000	0.00	Q	|	|	|	|
0+15	0.0001	0.01	Q	|	|	|	|

0+20	0.0001	0.01	Q	|	|	|	|
0+25	0.0002	0.01	Q	|	|	|	|
0+30	0.0002	0.01	Q	|	|	|	|
0+35	0.0003	0.01	Q	|	|	|	|
0+40	0.0004	0.01	Q	|	|	|	|
0+45	0.0005	0.01	Q	|	|	|	|
0+50	0.0006	0.01	Q	|	|	|	|
0+55	0.0006	0.01	Q	|	|	|	|
1+ 0	0.0007	0.01	Q	|	|	|	|
1+ 5	0.0008	0.01	Q	|	|	|	|
1+10	0.0009	0.01	Q	|	|	|	|
1+15	0.0010	0.01	Q	|	|	|	|
1+20	0.0011	0.01	Q	|	|	|	|
1+25	0.0012	0.01	Q	|	|	|	|
1+30	0.0013	0.01	Q	|	|	|	|
1+35	0.0014	0.01	Q	|	|	|	|
1+40	0.0014	0.01	Q	|	|	|	|
1+45	0.0015	0.01	Q	|	|	|	|
1+50	0.0016	0.01	Q	|	|	|	|
1+55	0.0017	0.01	Q	|	|	|	|
2+ 0	0.0018	0.01	Q	|	|	|	|
2+ 5	0.0019	0.01	Q	|	|	|	|
2+10	0.0020	0.02	Q	|	|	|	|
2+15	0.0021	0.02	Q	|	|	|	|
2+20	0.0022	0.02	Q	|	|	|	|
2+25	0.0023	0.02	Q	|	|	|	|
2+30	0.0024	0.02	Q	|	|	|	|
2+35	0.0025	0.02	Q	|	|	|	|
2+40	0.0027	0.02	Q	|	|	|	|
2+45	0.0028	0.02	Q	|	|	|	|
2+50	0.0029	0.02	Q	|	|	|	|
2+55	0.0031	0.02	QV	|	|	|	|
3+ 0	0.0032	0.02	QV	|	|	|	|
3+ 5	0.0033	0.02	QV	|	|	|	|
3+10	0.0035	0.02	QV	|	|	|	|
3+15	0.0036	0.02	QV	|	|	|	|
3+20	0.0037	0.02	QV	|	|	|	|
3+25	0.0039	0.02	QV	|	|	|	|
3+30	0.0040	0.02	QV	|	|	|	|
3+35	0.0041	0.02	QV	|	|	|	|
3+40	0.0043	0.02	QV	|	|	|	|
3+45	0.0044	0.02	QV	|	|	|	|
3+50	0.0045	0.02	QV	|	|	|	|
3+55	0.0047	0.02	QV	|	|	|	|
4+ 0	0.0048	0.02	QV	|	|	|	|
4+ 5	0.0050	0.02	QV	|	|	|	|
4+10	0.0051	0.02	QV	|	|	|	|
4+15	0.0053	0.02	QV	|	|	|	|
4+20	0.0055	0.02	QV	|	|	|	|
4+25	0.0056	0.03	QV	|	|	|	|
4+30	0.0058	0.03	QV	|	|	|	|
4+35	0.0060	0.03	QV	|	|	|	|
4+40	0.0062	0.03	Q V	|	|	|	|
4+45	0.0064	0.03	Q V	|	|	|	|
4+50	0.0066	0.03	Q V	|	|	|	|
4+55	0.0068	0.03	Q V	|	|	|	|
5+ 0	0.0070	0.03	Q V	|	|	|	|
5+ 5	0.0072	0.03	Q V	|	|	|	|
5+10	0.0074	0.03	Q V	|	|	|	|
5+15	0.0075	0.03	Q V	|	|	|	|

5+20	0.0077	0.03	Q V	|	|	|	|
5+25	0.0079	0.03	Q V	|	|	|	|
5+30	0.0081	0.03	Q V	|	|	|	|
5+35	0.0083	0.03	Q V	|	|	|	|
5+40	0.0085	0.03	Q V	|	|	|	|
5+45	0.0087	0.03	Q V	|	|	|	|
5+50	0.0089	0.03	Q V	|	|	|	|
5+55	0.0091	0.03	Q V	|	|	|	|
6+ 0	0.0093	0.03	Q V	|	|	|	|
6+ 5	0.0095	0.03	Q V	|	|	|	|
6+10	0.0098	0.03	Q V	|	|	|	|
6+15	0.0100	0.03	Q V	|	|	|	|
6+20	0.0102	0.03	Q V	|	|	|	|
6+25	0.0105	0.03	Q V	|	|	|	|
6+30	0.0107	0.03	Q V	|	|	|	|
6+35	0.0110	0.04	Q V	|	|	|	|
6+40	0.0112	0.04	Q V	|	|	|	|
6+45	0.0115	0.04	Q V	|	|	|	|
6+50	0.0117	0.04	Q V	|	|	|	|
6+55	0.0120	0.04	Q V	|	|	|	|
7+ 0	0.0123	0.04	Q V	|	|	|	|
7+ 5	0.0125	0.04	Q V	|	|	|	|
7+10	0.0128	0.04	Q V	|	|	|	|
7+15	0.0131	0.04	Q V	|	|	|	|
7+20	0.0134	0.04	Q V	|	|	|	|
7+25	0.0136	0.04	Q V	|	|	|	|
7+30	0.0139	0.04	Q V	|	|	|	|
7+35	0.0142	0.04	Q V	|	|	|	|
7+40	0.0145	0.04	Q V	|	|	|	|
7+45	0.0148	0.05	Q V	|	|	|	|
7+50	0.0152	0.05	Q V	|	|	|	|
7+55	0.0155	0.05	Q V	|	|	|	|
8+ 0	0.0158	0.05	Q V	|	|	|	|
8+ 5	0.0162	0.05	Q V	|	|	|	|
8+10	0.0166	0.05	Q V	|	|	|	|
8+15	0.0169	0.06	Q V	|	|	|	|
8+20	0.0173	0.06	Q V	|	|	|	|
8+25	0.0177	0.06	Q V	|	|	|	|
8+30	0.0181	0.06	Q V	|	|	|	|
8+35	0.0185	0.06	Q V	|	|	|	|
8+40	0.0190	0.06	Q V	|	|	|	|
8+45	0.0194	0.06	Q V	|	|	|	|
8+50	0.0198	0.06	Q V	|	|	|	|
8+55	0.0202	0.06	Q V	|	|	|	|
9+ 0	0.0207	0.07	Q V	|	|	|	|
9+ 5	0.0212	0.07	Q V	|	|	|	|
9+10	0.0216	0.07	Q V	|	|	|	|
9+15	0.0221	0.07	Q V	|	|	|	|
9+20	0.0226	0.07	Q V	|	|	|	|
9+25	0.0232	0.08	Q V	|	|	|	|
9+30	0.0237	0.08	Q V	|	|	|	|
9+35	0.0242	0.08	Q V	|	|	|	|
9+40	0.0248	0.08	Q V	|	|	|	|
9+45	0.0253	0.08	Q V	|	|	|	|
9+50	0.0259	0.08	Q V	|	|	|	|
9+55	0.0265	0.08	Q V	|	|	|	|
10+ 0	0.0270	0.08	Q V	|	|	|	|
10+ 5	0.0276	0.08	Q V	|	|	|	|
10+10	0.0281	0.07	Q V	|	|	|	|
10+15	0.0286	0.07	Q V	|	|	|	|



15+20	0.1044	0.21	Q	|	|	|	V |
15+25	0.1057	0.19	Q	|	|	|	V |
15+30	0.1070	0.19	Q	|	|	|	V |
15+35	0.1082	0.18	Q	|	|	|	V |
15+40	0.1091	0.13	Q	|	|	|	V |
15+45	0.1099	0.11	Q	|	|	|	V |
15+50	0.1105	0.10	Q	|	|	|	V |
15+55	0.1111	0.09	Q	|	|	|	V |
16+ 0	0.1117	0.08	Q	|	|	|	V |
16+ 5	0.1122	0.08	Q	|	|	|	V |
16+10	0.1126	0.05	Q	|	|	|	V |
16+15	0.1128	0.03	Q	|	|	|	V |
16+20	0.1130	0.03	Q	|	|	|	V |
16+25	0.1132	0.02	Q	|	|	|	V |
16+30	0.1133	0.02	Q	|	|	|	V |
16+35	0.1135	0.02	Q	|	|	|	V |
16+40	0.1136	0.02	Q	|	|	|	V |
16+45	0.1137	0.01	Q	|	|	|	V |
16+50	0.1138	0.01	Q	|	|	|	V |
16+55	0.1139	0.01	Q	|	|	|	V |
17+ 0	0.1139	0.01	Q	|	|	|	V |
17+ 5	0.1140	0.01	Q	|	|	|	V |
17+10	0.1141	0.02	Q	|	|	|	V |
17+15	0.1143	0.02	Q	|	|	|	V |
17+20	0.1144	0.02	Q	|	|	|	V |
17+25	0.1145	0.02	Q	|	|	|	V |
17+30	0.1146	0.02	Q	|	|	|	V |
17+35	0.1148	0.02	Q	|	|	|	V |
17+40	0.1149	0.02	Q	|	|	|	V |
17+45	0.1150	0.02	Q	|	|	|	V |
17+50	0.1152	0.02	Q	|	|	|	V |
17+55	0.1153	0.02	Q	|	|	|	V |
18+ 0	0.1154	0.02	Q	|	|	|	V |
18+ 5	0.1155	0.02	Q	|	|	|	V |
18+10	0.1156	0.02	Q	|	|	|	V |
18+15	0.1157	0.02	Q	|	|	|	V |
18+20	0.1158	0.02	Q	|	|	|	V |
18+25	0.1160	0.02	Q	|	|	|	V |
18+30	0.1161	0.02	Q	|	|	|	V |
18+35	0.1162	0.02	Q	|	|	|	V |
18+40	0.1163	0.01	Q	|	|	|	V |
18+45	0.1164	0.01	Q	|	|	|	V |
18+50	0.1164	0.01	Q	|	|	|	V |
18+55	0.1165	0.01	Q	|	|	|	V |
19+ 0	0.1166	0.01	Q	|	|	|	V |
19+ 5	0.1166	0.01	Q	|	|	|	V |
19+10	0.1167	0.01	Q	|	|	|	V |
19+15	0.1168	0.01	Q	|	|	|	V |
19+20	0.1169	0.01	Q	|	|	|	V |
19+25	0.1170	0.01	Q	|	|	|	V |
19+30	0.1171	0.01	Q	|	|	|	V |
19+35	0.1172	0.01	Q	|	|	|	V |
19+40	0.1172	0.01	Q	|	|	|	V |
19+45	0.1173	0.01	Q	|	|	|	V |
19+50	0.1174	0.01	Q	|	|	|	V |
19+55	0.1175	0.01	Q	|	|	|	V |
20+ 0	0.1175	0.01	Q	|	|	|	V |
20+ 5	0.1176	0.01	Q	|	|	|	V |
20+10	0.1177	0.01	Q	|	|	|	V |
20+15	0.1178	0.01	Q	|	|	|	V|

20+20	0.1178	0.01	Q	|	|	|	V|
20+25	0.1179	0.01	Q	|	|	|	V|
20+30	0.1180	0.01	Q	|	|	|	V|
20+35	0.1181	0.01	Q	|	|	|	V|
20+40	0.1182	0.01	Q	|	|	|	V|
20+45	0.1182	0.01	Q	|	|	|	V|
20+50	0.1183	0.01	Q	|	|	|	V|
20+55	0.1184	0.01	Q	|	|	|	V|
21+ 0	0.1184	0.01	Q	|	|	|	V|
21+ 5	0.1185	0.01	Q	|	|	|	V|
21+10	0.1186	0.01	Q	|	|	|	V|
21+15	0.1187	0.01	Q	|	|	|	V|
21+20	0.1187	0.01	Q	|	|	|	V|
21+25	0.1188	0.01	Q	|	|	|	V|
21+30	0.1189	0.01	Q	|	|	|	V|
21+35	0.1189	0.01	Q	|	|	|	V|
21+40	0.1190	0.01	Q	|	|	|	V|
21+45	0.1191	0.01	Q	|	|	|	V|
21+50	0.1191	0.01	Q	|	|	|	V|
21+55	0.1192	0.01	Q	|	|	|	V|
22+ 0	0.1193	0.01	Q	|	|	|	V|
22+ 5	0.1193	0.01	Q	|	|	|	V|
22+10	0.1194	0.01	Q	|	|	|	V|
22+15	0.1195	0.01	Q	|	|	|	V|
22+20	0.1195	0.01	Q	|	|	|	V|
22+25	0.1196	0.01	Q	|	|	|	V|
22+30	0.1197	0.01	Q	|	|	|	V|
22+35	0.1197	0.01	Q	|	|	|	V|
22+40	0.1198	0.01	Q	|	|	|	V|
22+45	0.1198	0.01	Q	|	|	|	V|
22+50	0.1199	0.01	Q	|	|	|	V|
22+55	0.1199	0.01	Q	|	|	|	V|
23+ 0	0.1200	0.01	Q	|	|	|	V|
23+ 5	0.1201	0.01	Q	|	|	|	V|
23+10	0.1201	0.01	Q	|	|	|	V|
23+15	0.1202	0.01	Q	|	|	|	V|
23+20	0.1202	0.01	Q	|	|	|	V|
23+25	0.1203	0.01	Q	|	|	|	V|
23+30	0.1203	0.01	Q	|	|	|	V|
23+35	0.1204	0.01	Q	|	|	|	V|
23+40	0.1204	0.01	Q	|	|	|	V|
23+45	0.1205	0.01	Q	|	|	|	V|
23+50	0.1205	0.01	Q	|	|	|	V|
23+55	0.1206	0.01	Q	|	|	|	V|
24+ 0	0.1206	0.01	Q	|	|	|	V|
24+ 5	0.1207	0.01	Q	|	|	|	V|
24+10	0.1207	0.00	Q	|	|	|	V|
24+15	0.1207	0.00	Q	|	|	|	V|
24+20	0.1207	0.00	Q	|	|	|	V|
24+25	0.1208	0.00	Q	|	|	|	V|
24+30	0.1208	0.00	Q	|	|	|	V|
24+35	0.1208	0.00	Q	|	|	|	V|
24+40	0.1208	0.00	Q	|	|	|	V|
24+45	0.1208	0.00	Q	|	|	|	V|
24+50	0.1208	0.00	Q	|	|	|	V|
24+55	0.1208	0.00	Q	|	|	|	V|
25+ 0	0.1208	0.00	Q	|	|	|	V

APPENDIX D

ON-SITE HYDROLOGY BASED ON PROPOSED CONDITION (UNIT HYDROGRAPH)

APPENDIX D.1

10-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

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 06/15/22 File: 102410.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0012 WHEAT STREET INDUSTRIAL
10-YEAR, 24-HOUR STORM EVENT
POST DEVELOPMENT
A1

Drainage Area = 4.72(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.72(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.105 Hr.
Lag time = 6.28 Min.
25% of lag time = 1.57 Min.
40% of lag time = 2.51 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]
4.72	2.06	9.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.72	5.32	25.11

STORM EVENT (YEAR) = 10.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 3.401(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 3.401(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.720	75.00	0.900

Total Area Entered = 4.72(Ac.)

RI AMC2	RI AMC-2	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
75.0	75.0	0.303	0.900	0.058	1.000	0.058
					Sum (F) =	0.058

Area averaged mean soil loss (F) (In/Hr) = 0.058
Minimum soil loss rate ((In/Hr)) = 0.029
(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 (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	79.592	13.187	0.627
2	0.167	159.185	44.278	2.106
3	0.250	238.777	20.054	0.954
4	0.333	318.370	8.272	0.393
5	0.417	397.962	4.968	0.236
6	0.500	477.555	3.140	0.149
7	0.583	557.147	2.257	0.107
8	0.667	636.740	1.556	0.074
9	0.750	716.332	1.050	0.050
10	0.833	795.925	0.800	0.038
11	0.917	875.517	0.439	0.021
			Sum = 100.000	Sum= 4.757

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max	Low	Effective (In/Hr)
1	0.08	0.07	0.027	(0.102)	0.005	0.022
2	0.17	0.07	0.027	(0.102)	0.005	0.022
3	0.25	0.07	0.027	(0.101)	0.005	0.022
4	0.33	0.10	0.041	(0.101)	0.007	0.033
5	0.42	0.10	0.041	(0.100)	0.007	0.033
6	0.50	0.10	0.041	(0.100)	0.007	0.033
7	0.58	0.10	0.041	(0.100)	0.007	0.033
8	0.67	0.10	0.041	(0.099)	0.007	0.033
9	0.75	0.10	0.041	(0.099)	0.007	0.033
10	0.83	0.13	0.054	(0.099)	0.010	0.045
11	0.92	0.13	0.054	(0.098)	0.010	0.045
12	1.00	0.13	0.054	(0.098)	0.010	0.045
13	1.08	0.10	0.041	(0.097)	0.007	0.033
14	1.17	0.10	0.041	(0.097)	0.007	0.033

15	1.25	0.10	0.041	(0.097)	0.007	0.033
16	1.33	0.10	0.041	(0.096)	0.007	0.033
17	1.42	0.10	0.041	(0.096)	0.007	0.033
18	1.50	0.10	0.041	(0.095)	0.007	0.033
19	1.58	0.10	0.041	(0.095)	0.007	0.033
20	1.67	0.10	0.041	(0.095)	0.007	0.033
21	1.75	0.10	0.041	(0.094)	0.007	0.033
22	1.83	0.13	0.054	(0.094)	0.010	0.045
23	1.92	0.13	0.054	(0.094)	0.010	0.045
24	2.00	0.13	0.054	(0.093)	0.010	0.045
25	2.08	0.13	0.054	(0.093)	0.010	0.045
26	2.17	0.13	0.054	(0.092)	0.010	0.045
27	2.25	0.13	0.054	(0.092)	0.010	0.045
28	2.33	0.13	0.054	(0.092)	0.010	0.045
29	2.42	0.13	0.054	(0.091)	0.010	0.045
30	2.50	0.13	0.054	(0.091)	0.010	0.045
31	2.58	0.17	0.068	(0.091)	0.012	0.056
32	2.67	0.17	0.068	(0.090)	0.012	0.056
33	2.75	0.17	0.068	(0.090)	0.012	0.056
34	2.83	0.17	0.068	(0.089)	0.012	0.056
35	2.92	0.17	0.068	(0.089)	0.012	0.056
36	3.00	0.17	0.068	(0.089)	0.012	0.056
37	3.08	0.17	0.068	(0.088)	0.012	0.056
38	3.17	0.17	0.068	(0.088)	0.012	0.056
39	3.25	0.17	0.068	(0.088)	0.012	0.056
40	3.33	0.17	0.068	(0.087)	0.012	0.056
41	3.42	0.17	0.068	(0.087)	0.012	0.056
42	3.50	0.17	0.068	(0.087)	0.012	0.056
43	3.58	0.17	0.068	(0.086)	0.012	0.056
44	3.67	0.17	0.068	(0.086)	0.012	0.056
45	3.75	0.17	0.068	(0.085)	0.012	0.056
46	3.83	0.20	0.082	(0.085)	0.015	0.067
47	3.92	0.20	0.082	(0.085)	0.015	0.067
48	4.00	0.20	0.082	(0.084)	0.015	0.067
49	4.08	0.20	0.082	(0.084)	0.015	0.067
50	4.17	0.20	0.082	(0.084)	0.015	0.067
51	4.25	0.20	0.082	(0.083)	0.015	0.067
52	4.33	0.23	0.095	(0.083)	0.017	0.078
53	4.42	0.23	0.095	(0.083)	0.017	0.078
54	4.50	0.23	0.095	(0.082)	0.017	0.078
55	4.58	0.23	0.095	(0.082)	0.017	0.078
56	4.67	0.23	0.095	(0.082)	0.017	0.078
57	4.75	0.23	0.095	(0.081)	0.017	0.078
58	4.83	0.27	0.109	(0.081)	0.020	0.089
59	4.92	0.27	0.109	(0.080)	0.020	0.089
60	5.00	0.27	0.109	(0.080)	0.020	0.089
61	5.08	0.20	0.082	(0.080)	0.015	0.067
62	5.17	0.20	0.082	(0.079)	0.015	0.067
63	5.25	0.20	0.082	(0.079)	0.015	0.067
64	5.33	0.23	0.095	(0.079)	0.017	0.078
65	5.42	0.23	0.095	(0.078)	0.017	0.078
66	5.50	0.23	0.095	(0.078)	0.017	0.078
67	5.58	0.27	0.109	(0.078)	0.020	0.089
68	5.67	0.27	0.109	(0.077)	0.020	0.089
69	5.75	0.27	0.109	(0.077)	0.020	0.089
70	5.83	0.27	0.109	(0.077)	0.020	0.089
71	5.92	0.27	0.109	(0.076)	0.020	0.089
72	6.00	0.27	0.109	(0.076)	0.020	0.089
73	6.08	0.30	0.122	(0.076)	0.022	0.100
74	6.17	0.30	0.122	(0.075)	0.022	0.100

75	6.25	0.30	0.122	(0.075)	0.022	0.100
76	6.33	0.30	0.122	(0.075)	0.022	0.100
77	6.42	0.30	0.122	(0.074)	0.022	0.100
78	6.50	0.30	0.122	(0.074)	0.022	0.100
79	6.58	0.33	0.136	(0.074)	0.024	0.112
80	6.67	0.33	0.136	(0.073)	0.024	0.112
81	6.75	0.33	0.136	(0.073)	0.024	0.112
82	6.83	0.33	0.136	(0.073)	0.024	0.112
83	6.92	0.33	0.136	(0.072)	0.024	0.112
84	7.00	0.33	0.136	(0.072)	0.024	0.112
85	7.08	0.33	0.136	(0.072)	0.024	0.112
86	7.17	0.33	0.136	(0.071)	0.024	0.112
87	7.25	0.33	0.136	(0.071)	0.024	0.112
88	7.33	0.37	0.150	(0.071)	0.027	0.123
89	7.42	0.37	0.150	(0.070)	0.027	0.123
90	7.50	0.37	0.150	(0.070)	0.027	0.123
91	7.58	0.40	0.163	(0.070)	0.029	0.134
92	7.67	0.40	0.163	(0.069)	0.029	0.134
93	7.75	0.40	0.163	(0.069)	0.029	0.134
94	7.83	0.43	0.177	(0.069)	0.032	0.145
95	7.92	0.43	0.177	(0.068)	0.032	0.145
96	8.00	0.43	0.177	(0.068)	0.032	0.145
97	8.08	0.50	0.204	(0.068)	0.037	0.167
98	8.17	0.50	0.204	(0.067)	0.037	0.167
99	8.25	0.50	0.204	(0.067)	0.037	0.167
100	8.33	0.50	0.204	(0.067)	0.037	0.167
101	8.42	0.50	0.204	(0.067)	0.037	0.167
102	8.50	0.50	0.204	(0.066)	0.037	0.167
103	8.58	0.53	0.218	(0.066)	0.039	0.178
104	8.67	0.53	0.218	(0.066)	0.039	0.178
105	8.75	0.53	0.218	(0.065)	0.039	0.178
106	8.83	0.57	0.231	(0.065)	0.042	0.190
107	8.92	0.57	0.231	(0.065)	0.042	0.190
108	9.00	0.57	0.231	(0.064)	0.042	0.190
109	9.08	0.63	0.258	(0.064)	0.047	0.212
110	9.17	0.63	0.258	(0.064)	0.047	0.212
111	9.25	0.63	0.258	(0.063)	0.047	0.212
112	9.33	0.67	0.272	(0.063)	0.049	0.223
113	9.42	0.67	0.272	(0.063)	0.049	0.223
114	9.50	0.67	0.272	(0.063)	0.049	0.223
115	9.58	0.70	0.286	(0.062)	0.051	0.234
116	9.67	0.70	0.286	(0.062)	0.051	0.234
117	9.75	0.70	0.286	(0.062)	0.051	0.234
118	9.83	0.73	0.299	(0.061)	0.054	0.245
119	9.92	0.73	0.299	(0.061)	0.054	0.245
120	10.00	0.73	0.299	(0.061)	0.054	0.245
121	10.08	0.50	0.204	(0.060)	0.037	0.167
122	10.17	0.50	0.204	(0.060)	0.037	0.167
123	10.25	0.50	0.204	(0.060)	0.037	0.167
124	10.33	0.50	0.204	(0.060)	0.037	0.167
125	10.42	0.50	0.204	(0.059)	0.037	0.167
126	10.50	0.50	0.204	(0.059)	0.037	0.167
127	10.58	0.67	0.272	(0.059)	0.049	0.223
128	10.67	0.67	0.272	(0.058)	0.049	0.223
129	10.75	0.67	0.272	(0.058)	0.049	0.223
130	10.83	0.67	0.272	(0.058)	0.049	0.223
131	10.92	0.67	0.272	(0.058)	0.049	0.223
132	11.00	0.67	0.272	(0.057)	0.049	0.223
133	11.08	0.63	0.258	(0.057)	0.047	0.212
134	11.17	0.63	0.258	(0.057)	0.047	0.212

135	11.25	0.63	0.258	(0.056)	0.047	0.212
136	11.33	0.63	0.258	(0.056)	0.047	0.212
137	11.42	0.63	0.258	(0.056)	0.047	0.212
138	11.50	0.63	0.258	(0.056)	0.047	0.212
139	11.58	0.57	0.231	(0.055)	0.042	0.190
140	11.67	0.57	0.231	(0.055)	0.042	0.190
141	11.75	0.57	0.231	(0.055)	0.042	0.190
142	11.83	0.60	0.245	(0.055)	0.044	0.201
143	11.92	0.60	0.245	(0.054)	0.044	0.201
144	12.00	0.60	0.245	(0.054)	0.044	0.201
145	12.08	0.83	0.340	0.054	(0.061)	0.286
146	12.17	0.83	0.340	0.053	(0.061)	0.287
147	12.25	0.83	0.340	0.053	(0.061)	0.287
148	12.33	0.87	0.354	0.053	(0.064)	0.301
149	12.42	0.87	0.354	0.053	(0.064)	0.301
150	12.50	0.87	0.354	0.052	(0.064)	0.301
151	12.58	0.93	0.381	0.052	(0.069)	0.329
152	12.67	0.93	0.381	0.052	(0.069)	0.329
153	12.75	0.93	0.381	0.052	(0.069)	0.329
154	12.83	0.97	0.395	0.051	(0.071)	0.343
155	12.92	0.97	0.395	0.051	(0.071)	0.343
156	13.00	0.97	0.395	0.051	(0.071)	0.344
157	13.08	1.13	0.463	0.051	(0.083)	0.412
158	13.17	1.13	0.463	0.050	(0.083)	0.412
159	13.25	1.13	0.463	0.050	(0.083)	0.412
160	13.33	1.13	0.463	0.050	(0.083)	0.413
161	13.42	1.13	0.463	0.050	(0.083)	0.413
162	13.50	1.13	0.463	0.049	(0.083)	0.413
163	13.58	0.77	0.313	0.049	(0.056)	0.264
164	13.67	0.77	0.313	0.049	(0.056)	0.264
165	13.75	0.77	0.313	0.049	(0.056)	0.264
166	13.83	0.77	0.313	0.048	(0.056)	0.265
167	13.92	0.77	0.313	0.048	(0.056)	0.265
168	14.00	0.77	0.313	0.048	(0.056)	0.265
169	14.08	0.90	0.367	0.048	(0.066)	0.320
170	14.17	0.90	0.367	0.047	(0.066)	0.320
171	14.25	0.90	0.367	0.047	(0.066)	0.320
172	14.33	0.87	0.354	0.047	(0.064)	0.307
173	14.42	0.87	0.354	0.047	(0.064)	0.307
174	14.50	0.87	0.354	0.046	(0.064)	0.307
175	14.58	0.87	0.354	0.046	(0.064)	0.308
176	14.67	0.87	0.354	0.046	(0.064)	0.308
177	14.75	0.87	0.354	0.046	(0.064)	0.308
178	14.83	0.83	0.340	0.045	(0.061)	0.295
179	14.92	0.83	0.340	0.045	(0.061)	0.295
180	15.00	0.83	0.340	0.045	(0.061)	0.295
181	15.08	0.80	0.327	0.045	(0.059)	0.282
182	15.17	0.80	0.327	0.045	(0.059)	0.282
183	15.25	0.80	0.327	0.044	(0.059)	0.282
184	15.33	0.77	0.313	0.044	(0.056)	0.269
185	15.42	0.77	0.313	0.044	(0.056)	0.269
186	15.50	0.77	0.313	0.044	(0.056)	0.269
187	15.58	0.63	0.258	0.043	(0.047)	0.215
188	15.67	0.63	0.258	0.043	(0.047)	0.215
189	15.75	0.63	0.258	0.043	(0.047)	0.216
190	15.83	0.63	0.258	0.043	(0.047)	0.216
191	15.92	0.63	0.258	0.042	(0.047)	0.216
192	16.00	0.63	0.258	0.042	(0.047)	0.216
193	16.08	0.13	0.054	(0.042)	0.010	0.045
194	16.17	0.13	0.054	(0.042)	0.010	0.045

195	16.25	0.13	0.054	(0.042)	0.010	0.045
196	16.33	0.13	0.054	(0.041)	0.010	0.045
197	16.42	0.13	0.054	(0.041)	0.010	0.045
198	16.50	0.13	0.054	(0.041)	0.010	0.045
199	16.58	0.10	0.041	(0.041)	0.007	0.033
200	16.67	0.10	0.041	(0.041)	0.007	0.033
201	16.75	0.10	0.041	(0.040)	0.007	0.033
202	16.83	0.10	0.041	(0.040)	0.007	0.033
203	16.92	0.10	0.041	(0.040)	0.007	0.033
204	17.00	0.10	0.041	(0.040)	0.007	0.033
205	17.08	0.17	0.068	(0.040)	0.012	0.056
206	17.17	0.17	0.068	(0.039)	0.012	0.056
207	17.25	0.17	0.068	(0.039)	0.012	0.056
208	17.33	0.17	0.068	(0.039)	0.012	0.056
209	17.42	0.17	0.068	(0.039)	0.012	0.056
210	17.50	0.17	0.068	(0.039)	0.012	0.056
211	17.58	0.17	0.068	(0.038)	0.012	0.056
212	17.67	0.17	0.068	(0.038)	0.012	0.056
213	17.75	0.17	0.068	(0.038)	0.012	0.056
214	17.83	0.13	0.054	(0.038)	0.010	0.045
215	17.92	0.13	0.054	(0.038)	0.010	0.045
216	18.00	0.13	0.054	(0.037)	0.010	0.045
217	18.08	0.13	0.054	(0.037)	0.010	0.045
218	18.17	0.13	0.054	(0.037)	0.010	0.045
219	18.25	0.13	0.054	(0.037)	0.010	0.045
220	18.33	0.13	0.054	(0.037)	0.010	0.045
221	18.42	0.13	0.054	(0.037)	0.010	0.045
222	18.50	0.13	0.054	(0.036)	0.010	0.045
223	18.58	0.10	0.041	(0.036)	0.007	0.033
224	18.67	0.10	0.041	(0.036)	0.007	0.033
225	18.75	0.10	0.041	(0.036)	0.007	0.033
226	18.83	0.07	0.027	(0.036)	0.005	0.022
227	18.92	0.07	0.027	(0.035)	0.005	0.022
228	19.00	0.07	0.027	(0.035)	0.005	0.022
229	19.08	0.10	0.041	(0.035)	0.007	0.033
230	19.17	0.10	0.041	(0.035)	0.007	0.033
231	19.25	0.10	0.041	(0.035)	0.007	0.033
232	19.33	0.13	0.054	(0.035)	0.010	0.045
233	19.42	0.13	0.054	(0.035)	0.010	0.045
234	19.50	0.13	0.054	(0.034)	0.010	0.045
235	19.58	0.10	0.041	(0.034)	0.007	0.033
236	19.67	0.10	0.041	(0.034)	0.007	0.033
237	19.75	0.10	0.041	(0.034)	0.007	0.033
238	19.83	0.07	0.027	(0.034)	0.005	0.022
239	19.92	0.07	0.027	(0.034)	0.005	0.022
240	20.00	0.07	0.027	(0.033)	0.005	0.022
241	20.08	0.10	0.041	(0.033)	0.007	0.033
242	20.17	0.10	0.041	(0.033)	0.007	0.033
243	20.25	0.10	0.041	(0.033)	0.007	0.033
244	20.33	0.10	0.041	(0.033)	0.007	0.033
245	20.42	0.10	0.041	(0.033)	0.007	0.033
246	20.50	0.10	0.041	(0.033)	0.007	0.033
247	20.58	0.10	0.041	(0.032)	0.007	0.033
248	20.67	0.10	0.041	(0.032)	0.007	0.033
249	20.75	0.10	0.041	(0.032)	0.007	0.033
250	20.83	0.07	0.027	(0.032)	0.005	0.022
251	20.92	0.07	0.027	(0.032)	0.005	0.022
252	21.00	0.07	0.027	(0.032)	0.005	0.022
253	21.08	0.10	0.041	(0.032)	0.007	0.033
254	21.17	0.10	0.041	(0.032)	0.007	0.033

255	21.25	0.10	0.041	(0.031)	0.007	0.033
256	21.33	0.07	0.027	(0.031)	0.005	0.022
257	21.42	0.07	0.027	(0.031)	0.005	0.022
258	21.50	0.07	0.027	(0.031)	0.005	0.022
259	21.58	0.10	0.041	(0.031)	0.007	0.033
260	21.67	0.10	0.041	(0.031)	0.007	0.033
261	21.75	0.10	0.041	(0.031)	0.007	0.033
262	21.83	0.07	0.027	(0.031)	0.005	0.022
263	21.92	0.07	0.027	(0.030)	0.005	0.022
264	22.00	0.07	0.027	(0.030)	0.005	0.022
265	22.08	0.10	0.041	(0.030)	0.007	0.033
266	22.17	0.10	0.041	(0.030)	0.007	0.033
267	22.25	0.10	0.041	(0.030)	0.007	0.033
268	22.33	0.07	0.027	(0.030)	0.005	0.022
269	22.42	0.07	0.027	(0.030)	0.005	0.022
270	22.50	0.07	0.027	(0.030)	0.005	0.022
271	22.58	0.07	0.027	(0.030)	0.005	0.022
272	22.67	0.07	0.027	(0.030)	0.005	0.022
273	22.75	0.07	0.027	(0.030)	0.005	0.022
274	22.83	0.07	0.027	(0.029)	0.005	0.022
275	22.92	0.07	0.027	(0.029)	0.005	0.022
276	23.00	0.07	0.027	(0.029)	0.005	0.022
277	23.08	0.07	0.027	(0.029)	0.005	0.022
278	23.17	0.07	0.027	(0.029)	0.005	0.022
279	23.25	0.07	0.027	(0.029)	0.005	0.022
280	23.33	0.07	0.027	(0.029)	0.005	0.022
281	23.42	0.07	0.027	(0.029)	0.005	0.022
282	23.50	0.07	0.027	(0.029)	0.005	0.022
283	23.58	0.07	0.027	(0.029)	0.005	0.022
284	23.67	0.07	0.027	(0.029)	0.005	0.022
285	23.75	0.07	0.027	(0.029)	0.005	0.022
286	23.83	0.07	0.027	(0.029)	0.005	0.022
287	23.92	0.07	0.027	(0.029)	0.005	0.022
288	24.00	0.07	0.027	(0.029)	0.005	0.022

(Loss Rate Not Used)

Sum = 100.0 Sum = 34.2

Flood volume = Effective rainfall 2.85(In)
times area 4.7(Ac.)/[(In)/(Ft.)] = 1.1(Ac.Ft)
Total soil loss = 0.55(In)
Total soil loss = 0.217(Ac.Ft)
Total rainfall = 3.40(In)
Flood volume = 48819.5 Cubic Feet
Total soil loss = 9454.6 Cubic Feet

Peak flow rate of this hydrograph = 1.944(CFS)

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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))

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	0.0005	0.06	Q	|	|	|	|
0+15	0.0011	0.08	Q	|	|	|	|
0+20	0.0018	0.10	Q	|	|	|	|
0+25	0.0026	0.13	Q	|	|	|	|

0+30	0.0036	0.14	Q	|	|	|	|
0+35	0.0046	0.15	Q	|	|	|	|
0+40	0.0057	0.15	Q	|	|	|	|
0+45	0.0067	0.15	Q	|	|	|	|
0+50	0.0079	0.16	Q	|	|	|	|
0+55	0.0092	0.19	Q	|	|	|	|
1+ 0	0.0105	0.20	Q	|	|	|	|
1+ 5	0.0119	0.20	Q	|	|	|	|
1+10	0.0131	0.18	Q	|	|	|	|
1+15	0.0143	0.17	Q	|	|	|	|
1+20	0.0154	0.16	Q	|	|	|	|
1+25	0.0165	0.16	Q	|	|	|	|
1+30	0.0176	0.16	Q	|	|	|	|
1+35	0.0188	0.16	Q	|	|	|	|
1+40	0.0199	0.16	Q	|	|	|	|
1+45	0.0210	0.16	Q	|	|	|	|
1+50	0.0221	0.17	Q	|	|	|	|
1+55	0.0234	0.19	Q	|	|	|	|
2+ 0	0.0248	0.20	Q	|	|	|	|
2+ 5	0.0262	0.20	Q	|	|	|	|
2+10	0.0276	0.21	Q	|	|	|	|
2+15	0.0291	0.21	QV	|	|	|	|
2+20	0.0305	0.21	QV	|	|	|	|
2+25	0.0320	0.21	QV	|	|	|	|
2+30	0.0334	0.21	QV	|	|	|	|
2+35	0.0349	0.22	QV	|	|	|	|
2+40	0.0366	0.24	QV	|	|	|	|
2+45	0.0384	0.25	|Q	|	|	|	|
2+50	0.0401	0.26	|Q	|	|	|	|
2+55	0.0419	0.26	|Q	|	|	|	|
3+ 0	0.0437	0.26	|Q	|	|	|	|
3+ 5	0.0456	0.26	|Q	|	|	|	|
3+10	0.0474	0.26	|Q	|	|	|	|
3+15	0.0492	0.26	|Q	|	|	|	|
3+20	0.0510	0.27	|Q	|	|	|	|
3+25	0.0529	0.27	|Q	|	|	|	|
3+30	0.0547	0.27	|Q	|	|	|	|
3+35	0.0565	0.27	|QV	|	|	|	|
3+40	0.0583	0.27	|QV	|	|	|	|
3+45	0.0602	0.27	|QV	|	|	|	|
3+50	0.0620	0.27	|QV	|	|	|	|
3+55	0.0641	0.30	|QV	|	|	|	|
4+ 0	0.0662	0.31	|QV	|	|	|	|
4+ 5	0.0683	0.31	|QV	|	|	|	|
4+10	0.0705	0.31	|QV	|	|	|	|
4+15	0.0727	0.32	|QV	|	|	|	|
4+20	0.0749	0.32	|QV	|	|	|	|
4+25	0.0773	0.35	|QV	|	|	|	|
4+30	0.0798	0.36	|QV	|	|	|	|
4+35	0.0823	0.36	|QV	|	|	|	|
4+40	0.0848	0.37	|Q V	|	|	|	|
4+45	0.0873	0.37	|Q V	|	|	|	|
4+50	0.0899	0.38	|Q V	|	|	|	|
4+55	0.0927	0.40	|Q V	|	|	|	|
5+ 0	0.0955	0.41	|Q V	|	|	|	|
5+ 5	0.0983	0.40	|Q V	|	|	|	|
5+10	0.1008	0.36	|Q V	|	|	|	|
5+15	0.1031	0.34	|Q V	|	|	|	|
5+20	0.1054	0.34	|Q V	|	|	|	|
5+25	0.1079	0.36	|Q V	|	|	|	|

5+30	0.1104	0.37	Q V				
5+35	0.1130	0.37	Q V				
5+40	0.1158	0.40	Q V				
5+45	0.1186	0.41	Q V				
5+50	0.1214	0.42	Q V				
5+55	0.1243	0.42	Q V				
6+ 0	0.1272	0.42	Q V				
6+ 5	0.1302	0.43	Q V				
6+10	0.1333	0.45	Q V				
6+15	0.1365	0.47	Q V				
6+20	0.1398	0.47	Q V				
6+25	0.1430	0.47	Q V				
6+30	0.1463	0.47	Q V				
6+35	0.1496	0.48	Q V				
6+40	0.1531	0.51	Q V				
6+45	0.1567	0.52	Q V				
6+50	0.1603	0.52	Q V				
6+55	0.1639	0.53	Q V				
7+ 0	0.1675	0.53	Q V				
7+ 5	0.1712	0.53	Q V				
7+10	0.1748	0.53	Q V				
7+15	0.1785	0.53	Q V				
7+20	0.1822	0.54	Q V				
7+25	0.1860	0.56	Q V				
7+30	0.1900	0.57	Q V				
7+35	0.1940	0.58	Q V				
7+40	0.1982	0.61	Q V				
7+45	0.2025	0.62	Q V				
7+50	0.2069	0.63	Q V				
7+55	0.2114	0.66	Q V				
8+ 0	0.2161	0.67	Q V				
8+ 5	0.2208	0.69	Q V				
8+10	0.2260	0.75	Q V				
8+15	0.2313	0.77	Q V				
8+20	0.2366	0.78	Q V				
8+25	0.2420	0.79	Q V				
8+30	0.2475	0.79	Q V				
8+35	0.2530	0.80	Q V				
8+40	0.2587	0.82	Q V				
8+45	0.2644	0.84	Q V				
8+50	0.2703	0.85	Q V				
8+55	0.2763	0.88	Q V				
9+ 0	0.2824	0.89	Q V				
9+ 5	0.2886	0.91	Q V				
9+10	0.2952	0.96	Q V				
9+15	0.3020	0.98	Q V				
9+20	0.3089	1.00	Q V				
9+25	0.3160	1.03	Q V				
9+30	0.3231	1.04	Q V				
9+35	0.3304	1.06	Q V				
9+40	0.3379	1.09	Q V				
9+45	0.3455	1.10	Q V				
9+50	0.3531	1.11	Q V				
9+55	0.3610	1.14	Q V				
10+ 0	0.3689	1.15	Q V				
10+ 5	0.3765	1.11	Q V				
10+10	0.3831	0.95	Q V				
10+15	0.3891	0.88	Q V				
10+20	0.3949	0.85	Q V				
10+25	0.4006	0.83	Q V				

10+30	0.4063	0.82	Q	V				
10+35	0.4121	0.85	Q	V				
10+40	0.4187	0.96	Q	V				
10+45	0.4256	1.01	Q	V				
10+50	0.4327	1.03	Q	V				
10+55	0.4398	1.04	Q	V				
11+ 0	0.4470	1.05	Q	V				
11+ 5	0.4542	1.04	Q	V				
11+10	0.4613	1.03	Q	V				
11+15	0.4683	1.02	Q	V				
11+20	0.4753	1.02	Q	V				
11+25	0.4823	1.01	Q	V				
11+30	0.4892	1.01	Q	V				
11+35	0.4961	1.00	Q	V				
11+40	0.5026	0.95	Q	V				
11+45	0.5090	0.93	Q	V				
11+50	0.5154	0.92	Q	V				
11+55	0.5219	0.94	Q	V				
12+ 0	0.5284	0.95	Q	V				
12+ 5	0.5354	1.01	Q	V				
12+10	0.5435	1.19	Q	V				
12+15	0.5523	1.27	Q	V				
12+20	0.5613	1.31	Q	V				
12+25	0.5707	1.36	Q	V				
12+30	0.5803	1.39	Q	V				
12+35	0.5901	1.43	Q	V				
12+40	0.6004	1.49	Q	V				
12+45	0.6109	1.53	Q	V				
12+50	0.6216	1.55	Q	V				
12+55	0.6326	1.59	Q	V				
13+ 0	0.6437	1.61	Q	V				
13+ 5	0.6551	1.66	Q	V				
13+10	0.6676	1.81	Q	V				
13+15	0.6806	1.88	Q	V				
13+20	0.6938	1.91	Q	V				
13+25	0.7071	1.93	Q	V				
13+30	0.7204	1.94	Q	V				
13+35	0.7333	1.86	Q	V				
13+40	0.7439	1.55	Q	V				
13+45	0.7537	1.41	Q	V				
13+50	0.7630	1.36	Q	V				
13+55	0.7721	1.32	Q	V				
14+ 0	0.7811	1.30	Q	V				
14+ 5	0.7902	1.32	Q	V				
14+10	0.8000	1.43	Q	V				
14+15	0.8102	1.47	Q	V				
14+20	0.8204	1.48	Q	V				
14+25	0.8304	1.46	Q	V				
14+30	0.8405	1.46	Q	V				
14+35	0.8506	1.46	Q	V				
14+40	0.8606	1.46	Q	V				
14+45	0.8707	1.46	Q	V				
14+50	0.8808	1.46	Q	V				
14+55	0.8906	1.43	Q	V				
15+ 0	0.9004	1.42	Q	V				
15+ 5	0.9100	1.40	Q	V				
15+10	0.9195	1.37	Q	V				
15+15	0.9289	1.36	Q	V				
15+20	0.9381	1.35	Q	V				
15+25	0.9472	1.31	Q	V				

15+30	0.9561	1.30		Q		V	
15+35	0.9648	1.26		Q		V	
15+40	0.9727	1.14		Q		V	
15+45	0.9801	1.09		Q		V	
15+50	0.9875	1.06		Q		V	
15+55	0.9947	1.05		Q		V	
16+ 0	1.0019	1.04		Q		V	
16+ 5	1.0083	0.93		Q		V	
16+10	1.0122	0.57		Q		V	
16+15	1.0149	0.40	Q			V	
16+20	1.0172	0.33	Q			V	
16+25	1.0192	0.29	Q			V	
16+30	1.0210	0.26	Q			V	
16+35	1.0226	0.24	Q			V	
16+40	1.0240	0.20	Q			V	
16+45	1.0253	0.18	Q			V	
16+50	1.0264	0.17	Q			V	
16+55	1.0276	0.16	Q			V	
17+ 0	1.0287	0.16	Q			V	
17+ 5	1.0299	0.18	Q			V	
17+10	1.0314	0.22	Q			V	
17+15	1.0331	0.24	Q			V	
17+20	1.0348	0.25	Q			V	
17+25	1.0366	0.26	Q			V	
17+30	1.0384	0.26	Q			V	
17+35	1.0402	0.26	Q			V	
17+40	1.0420	0.26	Q			V	
17+45	1.0438	0.26	Q			V	
17+50	1.0456	0.26	Q			V	
17+55	1.0472	0.23	Q			V	
18+ 0	1.0487	0.22	Q			V	
18+ 5	1.0502	0.22	Q			V	
18+10	1.0517	0.22	Q			V	
18+15	1.0532	0.22	Q			V	
18+20	1.0547	0.21	Q			V	
18+25	1.0562	0.21	Q			V	
18+30	1.0576	0.21	Q			V	
18+35	1.0591	0.21	Q			V	
18+40	1.0603	0.18	Q			V	
18+45	1.0615	0.17	Q			V	
18+50	1.0626	0.16	Q			V	
18+55	1.0635	0.13	Q			V	
19+ 0	1.0643	0.12	Q			V	
19+ 5	1.0652	0.12	Q			V	
19+10	1.0662	0.14	Q			V	
19+15	1.0672	0.15	Q			V	
19+20	1.0683	0.16	Q			V	
19+25	1.0696	0.19	Q			V	
19+30	1.0710	0.20	Q			V	
19+35	1.0723	0.20	Q			V	
19+40	1.0735	0.18	Q			V	
19+45	1.0747	0.17	Q			V	
19+50	1.0758	0.16	Q			V	
19+55	1.0767	0.13	Q			V	
20+ 0	1.0775	0.12	Q			V	
20+ 5	1.0784	0.12	Q			V	
20+10	1.0793	0.14	Q			V	
20+15	1.0804	0.15	Q			V	
20+20	1.0814	0.15	Q			V	
20+25	1.0825	0.16	Q			V	

20+30	1.0836	0.16	Q	|	|	|	V |
20+35	1.0847	0.16	Q	|	|	|	V |
20+40	1.0858	0.16	Q	|	|	|	V |
20+45	1.0869	0.16	Q	|	|	|	V |
20+50	1.0879	0.15	Q	|	|	|	V |
20+55	1.0888	0.13	Q	|	|	|	V |
21+ 0	1.0896	0.12	Q	|	|	|	V |
21+ 5	1.0904	0.12	Q	|	|	|	V |
21+10	1.0914	0.14	Q	|	|	|	V |
21+15	1.0924	0.15	Q	|	|	|	V |
21+20	1.0935	0.15	Q	|	|	|	V|
21+25	1.0943	0.13	Q	|	|	|	V|
21+30	1.0951	0.12	Q	|	|	|	V|
21+35	1.0959	0.12	Q	|	|	|	V|
21+40	1.0969	0.14	Q	|	|	|	V|
21+45	1.0979	0.15	Q	|	|	|	V|
21+50	1.0989	0.15	Q	|	|	|	V|
21+55	1.0998	0.13	Q	|	|	|	V|
22+ 0	1.1006	0.12	Q	|	|	|	V|
22+ 5	1.1014	0.12	Q	|	|	|	V|
22+10	1.1024	0.14	Q	|	|	|	V|
22+15	1.1034	0.15	Q	|	|	|	V|
22+20	1.1044	0.15	Q	|	|	|	V|
22+25	1.1053	0.13	Q	|	|	|	V|
22+30	1.1061	0.12	Q	|	|	|	V|
22+35	1.1069	0.11	Q	|	|	|	V|
22+40	1.1076	0.11	Q	|	|	|	V|
22+45	1.1084	0.11	Q	|	|	|	V|
22+50	1.1091	0.11	Q	|	|	|	V|
22+55	1.1098	0.11	Q	|	|	|	V|
23+ 0	1.1106	0.11	Q	|	|	|	V|
23+ 5	1.1113	0.11	Q	|	|	|	V|
23+10	1.1120	0.11	Q	|	|	|	V|
23+15	1.1128	0.11	Q	|	|	|	V|
23+20	1.1135	0.11	Q	|	|	|	V|
23+25	1.1142	0.11	Q	|	|	|	V|
23+30	1.1150	0.11	Q	|	|	|	V|
23+35	1.1157	0.11	Q	|	|	|	V|
23+40	1.1164	0.11	Q	|	|	|	V|
23+45	1.1172	0.11	Q	|	|	|	V|
23+50	1.1179	0.11	Q	|	|	|	V|
23+55	1.1186	0.11	Q	|	|	|	V|
24+ 0	1.1194	0.11	Q	|	|	|	V|
24+ 5	1.1200	0.09	Q	|	|	|	V|
24+10	1.1203	0.05	Q	|	|	|	V|
24+15	1.1205	0.02	Q	|	|	|	V|
24+20	1.1206	0.02	Q	|	|	|	V|
24+25	1.1206	0.01	Q	|	|	|	V|
24+30	1.1207	0.01	Q	|	|	|	V|
24+35	1.1207	0.00	Q	|	|	|	V|
24+40	1.1207	0.00	Q	|	|	|	V|
24+45	1.1207	0.00	Q	|	|	|	V|
24+50	1.1207	0.00	Q	|	|	|	V|

APPENDIX D.2

2-YEAR HYDROLOGY CALCULATIONS (PROPOSED)

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 06/15/22 File: 2242.out

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

Program License Serial Number 6522

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

English Units used in output format

1494-0012 WHEAT STREET INDUSTRIAL
2-YEAR, 24-HOUR
POST DEVELOPMENT
HCOC

Drainage Area = 4.72(Ac.) = 0.007 Sq. Mi.
Drainage Area for Depth-Area Areal Adjustment = 4.72(Ac.) = 0.007 Sq. Mi.
USER Entry of lag time in hours
Lag time = 0.105 Hr.
Lag time = 6.28 Min.
25% of lag time = 1.57 Min.
40% of lag time = 2.51 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]
4.72	2.06	9.72

100 YEAR Area rainfall data:

Area(Ac.)[1]	Rainfall(In)[2]	Weighting[1*2]
4.72	5.32	25.11

STORM EVENT (YEAR) = 2.00
Area Averaged 2-Year Rainfall = 2.060(In)
Area Averaged 100-Year Rainfall = 5.320(In)

Point rain (area averaged) = 2.060(In)
Areal adjustment factor = 100.00 %

Adjusted average point rain = 2.060(In)

Sub-Area Data:

Area(Ac.)	Runoff Index	Impervious %
4.720	75.00	0.900

Total Area Entered = 4.72(Ac.)

RI AMC2	RI AMC-1	Infil. Rate (In/Hr)	Impervious (Dec.%)	Adj. Infil. Rate (In/Hr)	Area% (Dec.)	F (In/Hr)
75.0	57.0	0.501	0.900	0.095	1.000	0.095
					Sum (F) =	0.095

Area averaged mean soil loss (F) (In/Hr) = 0.095
Minimum soil loss rate ((In/Hr)) = 0.048
(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 (hrs)		Time % of lag	Distribution Graph %	Unit Hydrograph (CFS)
1	0.083	79.592	13.187	0.627
2	0.167	159.185	44.278	2.106
3	0.250	238.777	20.054	0.954
4	0.333	318.370	8.272	0.393
5	0.417	397.962	4.968	0.236
6	0.500	477.555	3.140	0.149
7	0.583	557.147	2.257	0.107
8	0.667	636.740	1.556	0.074
9	0.750	716.332	1.050	0.050
10	0.833	795.925	0.800	0.038
11	0.917	875.517	0.439	0.021
			Sum = 100.000	Sum= 4.757

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 (Hr.)	Pattern Percent	Storm Rain (In/Hr)	Loss rate(In./Hr) Max		Low	Effective (In/Hr)
1	0.08	0.07	0.016	(0.169)		0.003	0.014
2	0.17	0.07	0.016	(0.168)		0.003	0.014
3	0.25	0.07	0.016	(0.167)		0.003	0.014
4	0.33	0.10	0.025	(0.167)		0.004	0.020
5	0.42	0.10	0.025	(0.166)		0.004	0.020
6	0.50	0.10	0.025	(0.165)		0.004	0.020
7	0.58	0.10	0.025	(0.165)		0.004	0.020
8	0.67	0.10	0.025	(0.164)		0.004	0.020
9	0.75	0.10	0.025	(0.163)		0.004	0.020
10	0.83	0.13	0.033	(0.163)		0.006	0.027
11	0.92	0.13	0.033	(0.162)		0.006	0.027
12	1.00	0.13	0.033	(0.162)		0.006	0.027
13	1.08	0.10	0.025	(0.161)		0.004	0.020
14	1.17	0.10	0.025	(0.160)		0.004	0.020

15	1.25	0.10	0.025	(0.160)	0.004	0.020
16	1.33	0.10	0.025	(0.159)	0.004	0.020
17	1.42	0.10	0.025	(0.158)	0.004	0.020
18	1.50	0.10	0.025	(0.158)	0.004	0.020
19	1.58	0.10	0.025	(0.157)	0.004	0.020
20	1.67	0.10	0.025	(0.156)	0.004	0.020
21	1.75	0.10	0.025	(0.156)	0.004	0.020
22	1.83	0.13	0.033	(0.155)	0.006	0.027
23	1.92	0.13	0.033	(0.155)	0.006	0.027
24	2.00	0.13	0.033	(0.154)	0.006	0.027
25	2.08	0.13	0.033	(0.153)	0.006	0.027
26	2.17	0.13	0.033	(0.153)	0.006	0.027
27	2.25	0.13	0.033	(0.152)	0.006	0.027
28	2.33	0.13	0.033	(0.151)	0.006	0.027
29	2.42	0.13	0.033	(0.151)	0.006	0.027
30	2.50	0.13	0.033	(0.150)	0.006	0.027
31	2.58	0.17	0.041	(0.150)	0.007	0.034
32	2.67	0.17	0.041	(0.149)	0.007	0.034
33	2.75	0.17	0.041	(0.148)	0.007	0.034
34	2.83	0.17	0.041	(0.148)	0.007	0.034
35	2.92	0.17	0.041	(0.147)	0.007	0.034
36	3.00	0.17	0.041	(0.147)	0.007	0.034
37	3.08	0.17	0.041	(0.146)	0.007	0.034
38	3.17	0.17	0.041	(0.145)	0.007	0.034
39	3.25	0.17	0.041	(0.145)	0.007	0.034
40	3.33	0.17	0.041	(0.144)	0.007	0.034
41	3.42	0.17	0.041	(0.144)	0.007	0.034
42	3.50	0.17	0.041	(0.143)	0.007	0.034
43	3.58	0.17	0.041	(0.142)	0.007	0.034
44	3.67	0.17	0.041	(0.142)	0.007	0.034
45	3.75	0.17	0.041	(0.141)	0.007	0.034
46	3.83	0.20	0.049	(0.141)	0.009	0.041
47	3.92	0.20	0.049	(0.140)	0.009	0.041
48	4.00	0.20	0.049	(0.139)	0.009	0.041
49	4.08	0.20	0.049	(0.139)	0.009	0.041
50	4.17	0.20	0.049	(0.138)	0.009	0.041
51	4.25	0.20	0.049	(0.138)	0.009	0.041
52	4.33	0.23	0.058	(0.137)	0.010	0.047
53	4.42	0.23	0.058	(0.136)	0.010	0.047
54	4.50	0.23	0.058	(0.136)	0.010	0.047
55	4.58	0.23	0.058	(0.135)	0.010	0.047
56	4.67	0.23	0.058	(0.135)	0.010	0.047
57	4.75	0.23	0.058	(0.134)	0.010	0.047
58	4.83	0.27	0.066	(0.134)	0.012	0.054
59	4.92	0.27	0.066	(0.133)	0.012	0.054
60	5.00	0.27	0.066	(0.132)	0.012	0.054
61	5.08	0.20	0.049	(0.132)	0.009	0.041
62	5.17	0.20	0.049	(0.131)	0.009	0.041
63	5.25	0.20	0.049	(0.131)	0.009	0.041
64	5.33	0.23	0.058	(0.130)	0.010	0.047
65	5.42	0.23	0.058	(0.129)	0.010	0.047
66	5.50	0.23	0.058	(0.129)	0.010	0.047
67	5.58	0.27	0.066	(0.128)	0.012	0.054
68	5.67	0.27	0.066	(0.128)	0.012	0.054
69	5.75	0.27	0.066	(0.127)	0.012	0.054
70	5.83	0.27	0.066	(0.127)	0.012	0.054
71	5.92	0.27	0.066	(0.126)	0.012	0.054
72	6.00	0.27	0.066	(0.126)	0.012	0.054
73	6.08	0.30	0.074	(0.125)	0.013	0.061
74	6.17	0.30	0.074	(0.124)	0.013	0.061

75	6.25	0.30	0.074	(0.124)	0.013	0.061
76	6.33	0.30	0.074	(0.123)	0.013	0.061
77	6.42	0.30	0.074	(0.123)	0.013	0.061
78	6.50	0.30	0.074	(0.122)	0.013	0.061
79	6.58	0.33	0.082	(0.122)	0.015	0.068
80	6.67	0.33	0.082	(0.121)	0.015	0.068
81	6.75	0.33	0.082	(0.121)	0.015	0.068
82	6.83	0.33	0.082	(0.120)	0.015	0.068
83	6.92	0.33	0.082	(0.119)	0.015	0.068
84	7.00	0.33	0.082	(0.119)	0.015	0.068
85	7.08	0.33	0.082	(0.118)	0.015	0.068
86	7.17	0.33	0.082	(0.118)	0.015	0.068
87	7.25	0.33	0.082	(0.117)	0.015	0.068
88	7.33	0.37	0.091	(0.117)	0.016	0.074
89	7.42	0.37	0.091	(0.116)	0.016	0.074
90	7.50	0.37	0.091	(0.116)	0.016	0.074
91	7.58	0.40	0.099	(0.115)	0.018	0.081
92	7.67	0.40	0.099	(0.115)	0.018	0.081
93	7.75	0.40	0.099	(0.114)	0.018	0.081
94	7.83	0.43	0.107	(0.114)	0.019	0.088
95	7.92	0.43	0.107	(0.113)	0.019	0.088
96	8.00	0.43	0.107	(0.113)	0.019	0.088
97	8.08	0.50	0.124	(0.112)	0.022	0.101
98	8.17	0.50	0.124	(0.112)	0.022	0.101
99	8.25	0.50	0.124	(0.111)	0.022	0.101
100	8.33	0.50	0.124	(0.110)	0.022	0.101
101	8.42	0.50	0.124	(0.110)	0.022	0.101
102	8.50	0.50	0.124	(0.109)	0.022	0.101
103	8.58	0.53	0.132	(0.109)	0.024	0.108
104	8.67	0.53	0.132	(0.108)	0.024	0.108
105	8.75	0.53	0.132	(0.108)	0.024	0.108
106	8.83	0.57	0.140	(0.107)	0.025	0.115
107	8.92	0.57	0.140	(0.107)	0.025	0.115
108	9.00	0.57	0.140	(0.106)	0.025	0.115
109	9.08	0.63	0.157	(0.106)	0.028	0.128
110	9.17	0.63	0.157	(0.105)	0.028	0.128
111	9.25	0.63	0.157	(0.105)	0.028	0.128
112	9.33	0.67	0.165	(0.104)	0.030	0.135
113	9.42	0.67	0.165	(0.104)	0.030	0.135
114	9.50	0.67	0.165	(0.103)	0.030	0.135
115	9.58	0.70	0.173	(0.103)	0.031	0.142
116	9.67	0.70	0.173	(0.102)	0.031	0.142
117	9.75	0.70	0.173	(0.102)	0.031	0.142
118	9.83	0.73	0.181	(0.101)	0.033	0.149
119	9.92	0.73	0.181	(0.101)	0.033	0.149
120	10.00	0.73	0.181	(0.100)	0.033	0.149
121	10.08	0.50	0.124	(0.100)	0.022	0.101
122	10.17	0.50	0.124	(0.099)	0.022	0.101
123	10.25	0.50	0.124	(0.099)	0.022	0.101
124	10.33	0.50	0.124	(0.099)	0.022	0.101
125	10.42	0.50	0.124	(0.098)	0.022	0.101
126	10.50	0.50	0.124	(0.098)	0.022	0.101
127	10.58	0.67	0.165	(0.097)	0.030	0.135
128	10.67	0.67	0.165	(0.097)	0.030	0.135
129	10.75	0.67	0.165	(0.096)	0.030	0.135
130	10.83	0.67	0.165	(0.096)	0.030	0.135
131	10.92	0.67	0.165	(0.095)	0.030	0.135
132	11.00	0.67	0.165	(0.095)	0.030	0.135
133	11.08	0.63	0.157	(0.094)	0.028	0.128
134	11.17	0.63	0.157	(0.094)	0.028	0.128

135	11.25	0.63	0.157	(0.093)	0.028	0.128
136	11.33	0.63	0.157	(0.093)	0.028	0.128
137	11.42	0.63	0.157	(0.092)	0.028	0.128
138	11.50	0.63	0.157	(0.092)	0.028	0.128
139	11.58	0.57	0.140	(0.091)	0.025	0.115
140	11.67	0.57	0.140	(0.091)	0.025	0.115
141	11.75	0.57	0.140	(0.091)	0.025	0.115
142	11.83	0.60	0.148	(0.090)	0.027	0.122
143	11.92	0.60	0.148	(0.090)	0.027	0.122
144	12.00	0.60	0.148	(0.089)	0.027	0.122
145	12.08	0.83	0.206	(0.089)	0.037	0.169
146	12.17	0.83	0.206	(0.088)	0.037	0.169
147	12.25	0.83	0.206	(0.088)	0.037	0.169
148	12.33	0.87	0.214	(0.087)	0.039	0.176
149	12.42	0.87	0.214	(0.087)	0.039	0.176
150	12.50	0.87	0.214	(0.087)	0.039	0.176
151	12.58	0.93	0.231	(0.086)	0.042	0.189
152	12.67	0.93	0.231	(0.086)	0.042	0.189
153	12.75	0.93	0.231	(0.085)	0.042	0.189
154	12.83	0.97	0.239	(0.085)	0.043	0.196
155	12.92	0.97	0.239	(0.084)	0.043	0.196
156	13.00	0.97	0.239	(0.084)	0.043	0.196
157	13.08	1.13	0.280	(0.084)	0.050	0.230
158	13.17	1.13	0.280	(0.083)	0.050	0.230
159	13.25	1.13	0.280	(0.083)	0.050	0.230
160	13.33	1.13	0.280	(0.082)	0.050	0.230
161	13.42	1.13	0.280	(0.082)	0.050	0.230
162	13.50	1.13	0.280	(0.081)	0.050	0.230
163	13.58	0.77	0.190	(0.081)	0.034	0.155
164	13.67	0.77	0.190	(0.081)	0.034	0.155
165	13.75	0.77	0.190	(0.080)	0.034	0.155
166	13.83	0.77	0.190	(0.080)	0.034	0.155
167	13.92	0.77	0.190	(0.079)	0.034	0.155
168	14.00	0.77	0.190	(0.079)	0.034	0.155
169	14.08	0.90	0.222	(0.079)	0.040	0.182
170	14.17	0.90	0.222	(0.078)	0.040	0.182
171	14.25	0.90	0.222	(0.078)	0.040	0.182
172	14.33	0.87	0.214	(0.077)	0.039	0.176
173	14.42	0.87	0.214	(0.077)	0.039	0.176
174	14.50	0.87	0.214	(0.077)	0.039	0.176
175	14.58	0.87	0.214	(0.076)	0.039	0.176
176	14.67	0.87	0.214	(0.076)	0.039	0.176
177	14.75	0.87	0.214	(0.075)	0.039	0.176
178	14.83	0.83	0.206	(0.075)	0.037	0.169
179	14.92	0.83	0.206	(0.075)	0.037	0.169
180	15.00	0.83	0.206	(0.074)	0.037	0.169
181	15.08	0.80	0.198	(0.074)	0.036	0.162
182	15.17	0.80	0.198	(0.074)	0.036	0.162
183	15.25	0.80	0.198	(0.073)	0.036	0.162
184	15.33	0.77	0.190	(0.073)	0.034	0.155
185	15.42	0.77	0.190	(0.072)	0.034	0.155
186	15.50	0.77	0.190	(0.072)	0.034	0.155
187	15.58	0.63	0.157	(0.072)	0.028	0.128
188	15.67	0.63	0.157	(0.071)	0.028	0.128
189	15.75	0.63	0.157	(0.071)	0.028	0.128
190	15.83	0.63	0.157	(0.071)	0.028	0.128
191	15.92	0.63	0.157	(0.070)	0.028	0.128
192	16.00	0.63	0.157	(0.070)	0.028	0.128
193	16.08	0.13	0.033	(0.069)	0.006	0.027
194	16.17	0.13	0.033	(0.069)	0.006	0.027

195	16.25	0.13	0.033	(0.069)	0.006	0.027
196	16.33	0.13	0.033	(0.068)	0.006	0.027
197	16.42	0.13	0.033	(0.068)	0.006	0.027
198	16.50	0.13	0.033	(0.068)	0.006	0.027
199	16.58	0.10	0.025	(0.067)	0.004	0.020
200	16.67	0.10	0.025	(0.067)	0.004	0.020
201	16.75	0.10	0.025	(0.067)	0.004	0.020
202	16.83	0.10	0.025	(0.066)	0.004	0.020
203	16.92	0.10	0.025	(0.066)	0.004	0.020
204	17.00	0.10	0.025	(0.066)	0.004	0.020
205	17.08	0.17	0.041	(0.065)	0.007	0.034
206	17.17	0.17	0.041	(0.065)	0.007	0.034
207	17.25	0.17	0.041	(0.065)	0.007	0.034
208	17.33	0.17	0.041	(0.064)	0.007	0.034
209	17.42	0.17	0.041	(0.064)	0.007	0.034
210	17.50	0.17	0.041	(0.064)	0.007	0.034
211	17.58	0.17	0.041	(0.063)	0.007	0.034
212	17.67	0.17	0.041	(0.063)	0.007	0.034
213	17.75	0.17	0.041	(0.063)	0.007	0.034
214	17.83	0.13	0.033	(0.062)	0.006	0.027
215	17.92	0.13	0.033	(0.062)	0.006	0.027
216	18.00	0.13	0.033	(0.062)	0.006	0.027
217	18.08	0.13	0.033	(0.062)	0.006	0.027
218	18.17	0.13	0.033	(0.061)	0.006	0.027
219	18.25	0.13	0.033	(0.061)	0.006	0.027
220	18.33	0.13	0.033	(0.061)	0.006	0.027
221	18.42	0.13	0.033	(0.060)	0.006	0.027
222	18.50	0.13	0.033	(0.060)	0.006	0.027
223	18.58	0.10	0.025	(0.060)	0.004	0.020
224	18.67	0.10	0.025	(0.059)	0.004	0.020
225	18.75	0.10	0.025	(0.059)	0.004	0.020
226	18.83	0.07	0.016	(0.059)	0.003	0.014
227	18.92	0.07	0.016	(0.059)	0.003	0.014
228	19.00	0.07	0.016	(0.058)	0.003	0.014
229	19.08	0.10	0.025	(0.058)	0.004	0.020
230	19.17	0.10	0.025	(0.058)	0.004	0.020
231	19.25	0.10	0.025	(0.058)	0.004	0.020
232	19.33	0.13	0.033	(0.057)	0.006	0.027
233	19.42	0.13	0.033	(0.057)	0.006	0.027
234	19.50	0.13	0.033	(0.057)	0.006	0.027
235	19.58	0.10	0.025	(0.056)	0.004	0.020
236	19.67	0.10	0.025	(0.056)	0.004	0.020
237	19.75	0.10	0.025	(0.056)	0.004	0.020
238	19.83	0.07	0.016	(0.056)	0.003	0.014
239	19.92	0.07	0.016	(0.055)	0.003	0.014
240	20.00	0.07	0.016	(0.055)	0.003	0.014
241	20.08	0.10	0.025	(0.055)	0.004	0.020
242	20.17	0.10	0.025	(0.055)	0.004	0.020
243	20.25	0.10	0.025	(0.055)	0.004	0.020
244	20.33	0.10	0.025	(0.054)	0.004	0.020
245	20.42	0.10	0.025	(0.054)	0.004	0.020
246	20.50	0.10	0.025	(0.054)	0.004	0.020
247	20.58	0.10	0.025	(0.054)	0.004	0.020
248	20.67	0.10	0.025	(0.053)	0.004	0.020
249	20.75	0.10	0.025	(0.053)	0.004	0.020
250	20.83	0.07	0.016	(0.053)	0.003	0.014
251	20.92	0.07	0.016	(0.053)	0.003	0.014
252	21.00	0.07	0.016	(0.052)	0.003	0.014
253	21.08	0.10	0.025	(0.052)	0.004	0.020
254	21.17	0.10	0.025	(0.052)	0.004	0.020

255	21.25	0.10	0.025	(0.052)	0.004	0.020
256	21.33	0.07	0.016	(0.052)	0.003	0.014
257	21.42	0.07	0.016	(0.051)	0.003	0.014
258	21.50	0.07	0.016	(0.051)	0.003	0.014
259	21.58	0.10	0.025	(0.051)	0.004	0.020
260	21.67	0.10	0.025	(0.051)	0.004	0.020
261	21.75	0.10	0.025	(0.051)	0.004	0.020
262	21.83	0.07	0.016	(0.051)	0.003	0.014
263	21.92	0.07	0.016	(0.050)	0.003	0.014
264	22.00	0.07	0.016	(0.050)	0.003	0.014
265	22.08	0.10	0.025	(0.050)	0.004	0.020
266	22.17	0.10	0.025	(0.050)	0.004	0.020
267	22.25	0.10	0.025	(0.050)	0.004	0.020
268	22.33	0.07	0.016	(0.050)	0.003	0.014
269	22.42	0.07	0.016	(0.049)	0.003	0.014
270	22.50	0.07	0.016	(0.049)	0.003	0.014
271	22.58	0.07	0.016	(0.049)	0.003	0.014
272	22.67	0.07	0.016	(0.049)	0.003	0.014
273	22.75	0.07	0.016	(0.049)	0.003	0.014
274	22.83	0.07	0.016	(0.049)	0.003	0.014
275	22.92	0.07	0.016	(0.049)	0.003	0.014
276	23.00	0.07	0.016	(0.048)	0.003	0.014
277	23.08	0.07	0.016	(0.048)	0.003	0.014
278	23.17	0.07	0.016	(0.048)	0.003	0.014
279	23.25	0.07	0.016	(0.048)	0.003	0.014
280	23.33	0.07	0.016	(0.048)	0.003	0.014
281	23.42	0.07	0.016	(0.048)	0.003	0.014
282	23.50	0.07	0.016	(0.048)	0.003	0.014
283	23.58	0.07	0.016	(0.048)	0.003	0.014
284	23.67	0.07	0.016	(0.048)	0.003	0.014
285	23.75	0.07	0.016	(0.048)	0.003	0.014
286	23.83	0.07	0.016	(0.048)	0.003	0.014
287	23.92	0.07	0.016	(0.048)	0.003	0.014
288	24.00	0.07	0.016	(0.048)	0.003	0.014

(Loss Rate Not Used)

Sum = 100.0 Sum = 20.3

Flood volume = Effective rainfall 1.69(In)
times area 4.7(Ac.)/[(In)/(Ft.)] = 0.7(Ac.Ft)
Total soil loss = 0.37(In)
Total soil loss = 0.146(Ac.Ft)
Total rainfall = 2.06(In)
Flood volume = 28941.8 Cubic Feet
Total soil loss = 6353.1 Cubic Feet

Peak flow rate of this hydrograph = 1.083(CFS)

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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))

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	0.05	Q	|	|	|	|
0+20	0.0011	0.06	Q	|	|	|	|
0+25	0.0016	0.08	Q	|	|	|	|

0+30	0.0022	0.09	Q	|	|	|	|
0+35	0.0028	0.09	Q	|	|	|	|
0+40	0.0034	0.09	Q	|	|	|	|
0+45	0.0041	0.09	Q	|	|	|	|
0+50	0.0048	0.10	Q	|	|	|	|
0+55	0.0055	0.11	Q	|	|	|	|
1+ 0	0.0064	0.12	Q	|	|	|	|
1+ 5	0.0072	0.12	Q	|	|	|	|
1+10	0.0079	0.11	Q	|	|	|	|
1+15	0.0086	0.10	Q	|	|	|	|
1+20	0.0093	0.10	Q	|	|	|	|
1+25	0.0100	0.10	Q	|	|	|	|
1+30	0.0107	0.10	Q	|	|	|	|
1+35	0.0114	0.10	Q	|	|	|	|
1+40	0.0120	0.10	Q	|	|	|	|
1+45	0.0127	0.10	Q	|	|	|	|
1+50	0.0134	0.10	Q	|	|	|	|
1+55	0.0142	0.11	Q	|	|	|	|
2+ 0	0.0150	0.12	Q	|	|	|	|
2+ 5	0.0159	0.12	Q	|	|	|	|
2+10	0.0167	0.13	QV	|	|	|	|
2+15	0.0176	0.13	QV	|	|	|	|
2+20	0.0185	0.13	QV	|	|	|	|
2+25	0.0194	0.13	QV	|	|	|	|
2+30	0.0203	0.13	QV	|	|	|	|
2+35	0.0212	0.13	QV	|	|	|	|
2+40	0.0222	0.15	QV	|	|	|	|
2+45	0.0232	0.15	QV	|	|	|	|
2+50	0.0243	0.16	QV	|	|	|	|
2+55	0.0254	0.16	QV	|	|	|	|
3+ 0	0.0265	0.16	QV	|	|	|	|
3+ 5	0.0276	0.16	QV	|	|	|	|
3+10	0.0287	0.16	QV	|	|	|	|
3+15	0.0298	0.16	QV	|	|	|	|
3+20	0.0309	0.16	QV	|	|	|	|
3+25	0.0320	0.16	QV	|	|	|	|
3+30	0.0331	0.16	QV	|	|	|	|
3+35	0.0342	0.16	Q V	|	|	|	|
3+40	0.0353	0.16	Q V	|	|	|	|
3+45	0.0364	0.16	Q V	|	|	|	|
3+50	0.0376	0.17	Q V	|	|	|	|
3+55	0.0388	0.18	Q V	|	|	|	|
4+ 0	0.0401	0.19	Q V	|	|	|	|
4+ 5	0.0414	0.19	Q V	|	|	|	|
4+10	0.0427	0.19	Q V	|	|	|	|
4+15	0.0440	0.19	Q V	|	|	|	|
4+20	0.0454	0.20	Q V	|	|	|	|
4+25	0.0468	0.21	Q V	|	|	|	|
4+30	0.0483	0.22	Q V	|	|	|	|
4+35	0.0498	0.22	Q V	|	|	|	|
4+40	0.0514	0.22	Q V	|	|	|	|
4+45	0.0529	0.22	Q V	|	|	|	|
4+50	0.0545	0.23	Q V	|	|	|	|
4+55	0.0561	0.24	Q V	|	|	|	|
5+ 0	0.0579	0.25	Q V	|	|	|	|
5+ 5	0.0595	0.24	Q V	|	|	|	|
5+10	0.0610	0.22	Q V	|	|	|	|
5+15	0.0625	0.21	Q V	|	|	|	|
5+20	0.0639	0.21	Q V	|	|	|	|
5+25	0.0654	0.22	Q V	|	|	|	|

5+30	0.0669	0.22	Q V	|	|	|
5+35	0.0684	0.23	Q V	|	|	|
5+40	0.0701	0.24	Q V	|	|	|
5+45	0.0718	0.25	Q V	|	|	|
5+50	0.0736	0.25	|Q V	|	|	|
5+55	0.0753	0.25	|Q V	|	|	|
6+ 0	0.0771	0.25	|Q V	|	|	|
6+ 5	0.0789	0.26	|Q V	|	|	|
6+10	0.0807	0.28	|Q V	|	|	|
6+15	0.0827	0.28	|Q V	|	|	|
6+20	0.0846	0.28	|Q V	|	|	|
6+25	0.0866	0.29	|Q V	|	|	|
6+30	0.0886	0.29	|Q V	|	|	|
6+35	0.0906	0.29	|Q V	|	|	|
6+40	0.0927	0.31	|Q V	|	|	|
6+45	0.0949	0.31	|Q V	|	|	|
6+50	0.0971	0.32	|Q V	|	|	|
6+55	0.0993	0.32	|Q V	|	|	|
7+ 0	0.1015	0.32	|Q V	|	|	|
7+ 5	0.1037	0.32	|Q V	|	|	|
7+10	0.1059	0.32	|Q V	|	|	|
7+15	0.1081	0.32	|Q V	|	|	|
7+20	0.1103	0.33	|Q V	|	|	|
7+25	0.1127	0.34	|Q V	|	|	|
7+30	0.1151	0.35	|Q V	|	|	|
7+35	0.1175	0.35	|Q V	|	|	|
7+40	0.1200	0.37	|Q V	|	|	|
7+45	0.1226	0.38	|Q V	|	|	|
7+50	0.1253	0.38	|Q V	|	|	|
7+55	0.1280	0.40	|Q V	|	|	|
8+ 0	0.1309	0.41	|Q V	|	|	|
8+ 5	0.1338	0.42	|Q V	|	|	|
8+10	0.1369	0.45	|Q V	|	|	|
8+15	0.1401	0.47	|Q V	|	|	|
8+20	0.1433	0.47	|Q V	|	|	|
8+25	0.1466	0.48	|Q V	|	|	|
8+30	0.1499	0.48	|Q V|	|	|	|
8+35	0.1532	0.48	|Q V|	|	|	|
8+40	0.1567	0.50	|Q V|	|	|	|
8+45	0.1601	0.51	| Q V|	|	|	|
8+50	0.1637	0.51	| Q V|	|	|	|
8+55	0.1673	0.53	| Q V	|	|	|
9+ 0	0.1710	0.54	| Q V	|	|	|
9+ 5	0.1748	0.55	| Q V	|	|	|
9+10	0.1788	0.58	| Q V	|	|	|
9+15	0.1829	0.59	| Q |V	|	|	|
9+20	0.1871	0.60	| Q |V	|	|	|
9+25	0.1914	0.62	| Q |V	|	|	|
9+30	0.1957	0.63	| Q |V	|	|	|
9+35	0.2001	0.64	| Q | V	|	|	|
9+40	0.2046	0.66	| Q | V	|	|	|
9+45	0.2092	0.67	| Q | V	|	|	|
9+50	0.2139	0.67	| Q | V	|	|	|
9+55	0.2186	0.69	| Q | V	|	|	|
10+ 0	0.2234	0.70	| Q | V	|	|	|
10+ 5	0.2281	0.67	| Q | V	|	|	|
10+10	0.2320	0.57	| Q | V	|	|	|
10+15	0.2357	0.53	| Q | V	|	|	|
10+20	0.2392	0.51	| Q | V	|	|	|
10+25	0.2427	0.50	| Q | V	|	|	|

10+30	0.2461	0.50	Q	V			
10+35	0.2496	0.51	Q	V			
10+40	0.2536	0.58	Q	V			
10+45	0.2578	0.61	Q	V			
10+50	0.2621	0.62	Q	V			
10+55	0.2664	0.63	Q	V			
11+ 0	0.2708	0.63	Q	V			
11+ 5	0.2751	0.63	Q	V			
11+10	0.2794	0.62	Q	V			
11+15	0.2836	0.62	Q	V			
11+20	0.2879	0.61	Q	V			
11+25	0.2921	0.61	Q	V			
11+30	0.2963	0.61	Q	V			
11+35	0.3005	0.60	Q	V			
11+40	0.3044	0.57	Q	V			
11+45	0.3083	0.56	Q	V			
11+50	0.3122	0.56	Q	V			
11+55	0.3161	0.57	Q	V			
12+ 0	0.3201	0.58	Q	V			
12+ 5	0.3242	0.61	Q	V			
12+10	0.3291	0.71	Q	V			
12+15	0.3343	0.75	Q	V			
12+20	0.3396	0.78	Q	V			
12+25	0.3451	0.80	Q	V			
12+30	0.3508	0.81	Q	V			
12+35	0.3565	0.83	Q	V			
12+40	0.3624	0.86	Q	V			
12+45	0.3685	0.88	Q	V			
12+50	0.3747	0.89	Q	V			
12+55	0.3809	0.91	Q	V			
13+ 0	0.3873	0.92	Q	V			
13+ 5	0.3938	0.95	Q	V			
13+10	0.4008	1.02	Q	V			
13+15	0.4081	1.05	Q	V			
13+20	0.4155	1.07	Q	V			
13+25	0.4229	1.08	Q	V			
13+30	0.4303	1.08	Q	V			
13+35	0.4375	1.04	Q	V			
13+40	0.4436	0.89	Q	V			
13+45	0.4492	0.82	Q	V			
13+50	0.4547	0.79	Q	V			
13+55	0.4600	0.77	Q	V			
14+ 0	0.4652	0.76	Q	V			
14+ 5	0.4705	0.77	Q	V			
14+10	0.4762	0.82	Q	V			
14+15	0.4820	0.84	Q	V			
14+20	0.4878	0.85	Q	V			
14+25	0.4936	0.84	Q	V			
14+30	0.4994	0.84	Q	V			
14+35	0.5051	0.84	Q	V			
14+40	0.5109	0.84	Q	V			
14+45	0.5166	0.84	Q	V			
14+50	0.5224	0.83	Q	V			
14+55	0.5280	0.82	Q	V			
15+ 0	0.5336	0.81	Q	V			
15+ 5	0.5391	0.80	Q	V			
15+10	0.5446	0.79	Q	V			
15+15	0.5499	0.78	Q	V			
15+20	0.5553	0.77	Q	V			
15+25	0.5605	0.76	Q	V			

15+30	0.5656	0.75	Q				V
15+35	0.5707	0.73	Q				V
15+40	0.5753	0.67	Q				V
15+45	0.5797	0.64	Q				V
15+50	0.5840	0.63	Q				V
15+55	0.5883	0.62	Q				V
16+ 0	0.5926	0.62	Q				V
16+ 5	0.5964	0.55	Q				V
16+10	0.5987	0.34	Q				V
16+15	0.6004	0.24	Q				V
16+20	0.6017	0.20	Q				V
16+25	0.6029	0.17	Q				V
16+30	0.6040	0.16	Q				V
16+35	0.6050	0.14	Q				V
16+40	0.6058	0.12	Q				V
16+45	0.6066	0.11	Q				V
16+50	0.6073	0.10	Q				V
16+55	0.6080	0.10	Q				V
17+ 0	0.6087	0.10	Q				V
17+ 5	0.6094	0.11	Q				V
17+10	0.6103	0.13	Q				V
17+15	0.6113	0.15	Q				V
17+20	0.6124	0.15	Q				V
17+25	0.6134	0.15	Q				V
17+30	0.6145	0.16	Q				V
17+35	0.6156	0.16	Q				V
17+40	0.6167	0.16	Q				V
17+45	0.6178	0.16	Q				V
17+50	0.6189	0.16	Q				V
17+55	0.6199	0.14	Q				V
18+ 0	0.6208	0.14	Q				V
18+ 5	0.6217	0.13	Q				V
18+10	0.6226	0.13	Q				V
18+15	0.6235	0.13	Q				V
18+20	0.6244	0.13	Q				V
18+25	0.6253	0.13	Q				V
18+30	0.6262	0.13	Q				V
18+35	0.6271	0.12	Q				V
18+40	0.6278	0.11	Q				V
18+45	0.6285	0.10	Q				V
18+50	0.6292	0.10	Q				V
18+55	0.6297	0.08	Q				V
19+ 0	0.6303	0.07	Q				V
19+ 5	0.6308	0.07	Q				V
19+10	0.6314	0.09	Q				V
19+15	0.6320	0.09	Q				V
19+20	0.6327	0.10	Q				V
19+25	0.6334	0.11	Q				V
19+30	0.6343	0.12	Q				V
19+35	0.6351	0.12	Q				V
19+40	0.6358	0.11	Q				V
19+45	0.6365	0.10	Q				V
19+50	0.6372	0.10	Q				V
19+55	0.6377	0.08	Q				V
20+ 0	0.6382	0.07	Q				V
20+ 5	0.6387	0.07	Q				V
20+10	0.6393	0.09	Q				V
20+15	0.6400	0.09	Q				V
20+20	0.6406	0.09	Q				V
20+25	0.6413	0.09	Q				V

20+30	0.6419	0.09	Q	|	|	|	V |
20+35	0.6426	0.10	Q	|	|	|	V |
20+40	0.6432	0.10	Q	|	|	|	V |
20+45	0.6439	0.10	Q	|	|	|	V |
20+50	0.6445	0.09	Q	|	|	|	V |
20+55	0.6451	0.08	Q	|	|	|	V |
21+ 0	0.6456	0.07	Q	|	|	|	V |
21+ 5	0.6461	0.07	Q	|	|	|	V |
21+10	0.6466	0.09	Q	|	|	|	V |
21+15	0.6473	0.09	Q	|	|	|	V |
21+20	0.6479	0.09	Q	|	|	|	V|
21+25	0.6484	0.08	Q	|	|	|	V|
21+30	0.6489	0.07	Q	|	|	|	V|
21+35	0.6494	0.07	Q	|	|	|	V|
21+40	0.6500	0.09	Q	|	|	|	V|
21+45	0.6506	0.09	Q	|	|	|	V|
21+50	0.6512	0.09	Q	|	|	|	V|
21+55	0.6517	0.08	Q	|	|	|	V|
22+ 0	0.6522	0.07	Q	|	|	|	V|
22+ 5	0.6527	0.07	Q	|	|	|	V|
22+10	0.6533	0.09	Q	|	|	|	V|
22+15	0.6539	0.09	Q	|	|	|	V|
22+20	0.6545	0.09	Q	|	|	|	V|
22+25	0.6551	0.08	Q	|	|	|	V|
22+30	0.6555	0.07	Q	|	|	|	V|
22+35	0.6560	0.07	Q	|	|	|	V|
22+40	0.6565	0.07	Q	|	|	|	V|
22+45	0.6569	0.07	Q	|	|	|	V|
22+50	0.6574	0.07	Q	|	|	|	V|
22+55	0.6578	0.07	Q	|	|	|	V|
23+ 0	0.6583	0.06	Q	|	|	|	V|
23+ 5	0.6587	0.06	Q	|	|	|	V|
23+10	0.6591	0.06	Q	|	|	|	V|
23+15	0.6596	0.06	Q	|	|	|	V|
23+20	0.6600	0.06	Q	|	|	|	V|
23+25	0.6605	0.06	Q	|	|	|	V|
23+30	0.6609	0.06	Q	|	|	|	V|
23+35	0.6614	0.06	Q	|	|	|	V|
23+40	0.6618	0.06	Q	|	|	|	V|
23+45	0.6622	0.06	Q	|	|	|	V|
23+50	0.6627	0.06	Q	|	|	|	V|
23+55	0.6631	0.06	Q	|	|	|	V|
24+ 0	0.6636	0.06	Q	|	|	|	V|
24+ 5	0.6640	0.06	Q	|	|	|	V|
24+10	0.6641	0.03	Q	|	|	|	V|
24+15	0.6642	0.01	Q	|	|	|	V|
24+20	0.6643	0.01	Q	|	|	|	V|
24+25	0.6644	0.01	Q	|	|	|	V|
24+30	0.6644	0.00	Q	|	|	|	V|
24+35	0.6644	0.00	Q	|	|	|	V|
24+40	0.6644	0.00	Q	|	|	|	V|
24+45	0.6644	0.00	Q	|	|	|	V|
24+50	0.6644	0.00	Q	|	|	|	V

APPENDIX E

OFF-SITE HYDROLOGY BASED ON EXISTING CONDITION (RATIONAL METHOD)

APPENDIX E.1

100-YEAR HYDROLOGY CALCULATIONS (AREA B1)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/03/22 File:100B1.out

1494-0012 INDUSTRIAL
OFF SITE ANALYSIS
100-YEAR STORM EVENT
WESTERLY SIDE

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

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

Initial area flow distance = 980.000(Ft.)
Top (of initial area) elevation = 65.900(Ft.)
Bottom (of initial area) elevation = 46.100(Ft.)
Difference in elevation = 19.800(Ft.)
Slope = 0.02020 s(percent)= 2.02
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 18.184 min.

Rainfall intensity = 2.010(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3) = 95.60
Pervious area fraction = 1.000; Impervious fraction = 0.000
Initial subarea runoff = 11.974(CFS)
Total initial stream area = 6.820(Ac.)
Pervious area fraction = 1.000
End of computations, total study area = 6.82 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number = 89.0

APPENDIX E.2

100-YEAR HYDROLOGY CALCULATIONS (AREA B2)

Riverside County Rational Hydrology Program

CIVILCADD/CIVILDESIGN Engineering Software,(c) 1989 - 2018 Version 9.0
Rational Hydrology Study Date: 03/03/22 File:100B2.out

1494-0012 INDUSTRIAL
OFF SITE ANALYSIS
100-YEAR STORM EVENT
EASTERLY SIDE

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

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

Program License Serial Number 6522

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

Storm event (year) = 100.00 Antecedent Moisture Condition = 3

Standard intensity-duration curves data (Plate D-4.1)
For the [Perris Valley] area used.
10 year storm 10 minute intensity = 1.880(In/Hr)
10 year storm 60 minute intensity = 0.780(In/Hr)
100 year storm 10 minute intensity = 2.690(In/Hr)
100 year storm 60 minute intensity = 1.120(In/Hr)

Storm event year = 100.0
Calculated rainfall intensity data:
1 hour intensity = 1.120(In/Hr)
Slope of intensity duration curve = 0.4900

++

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

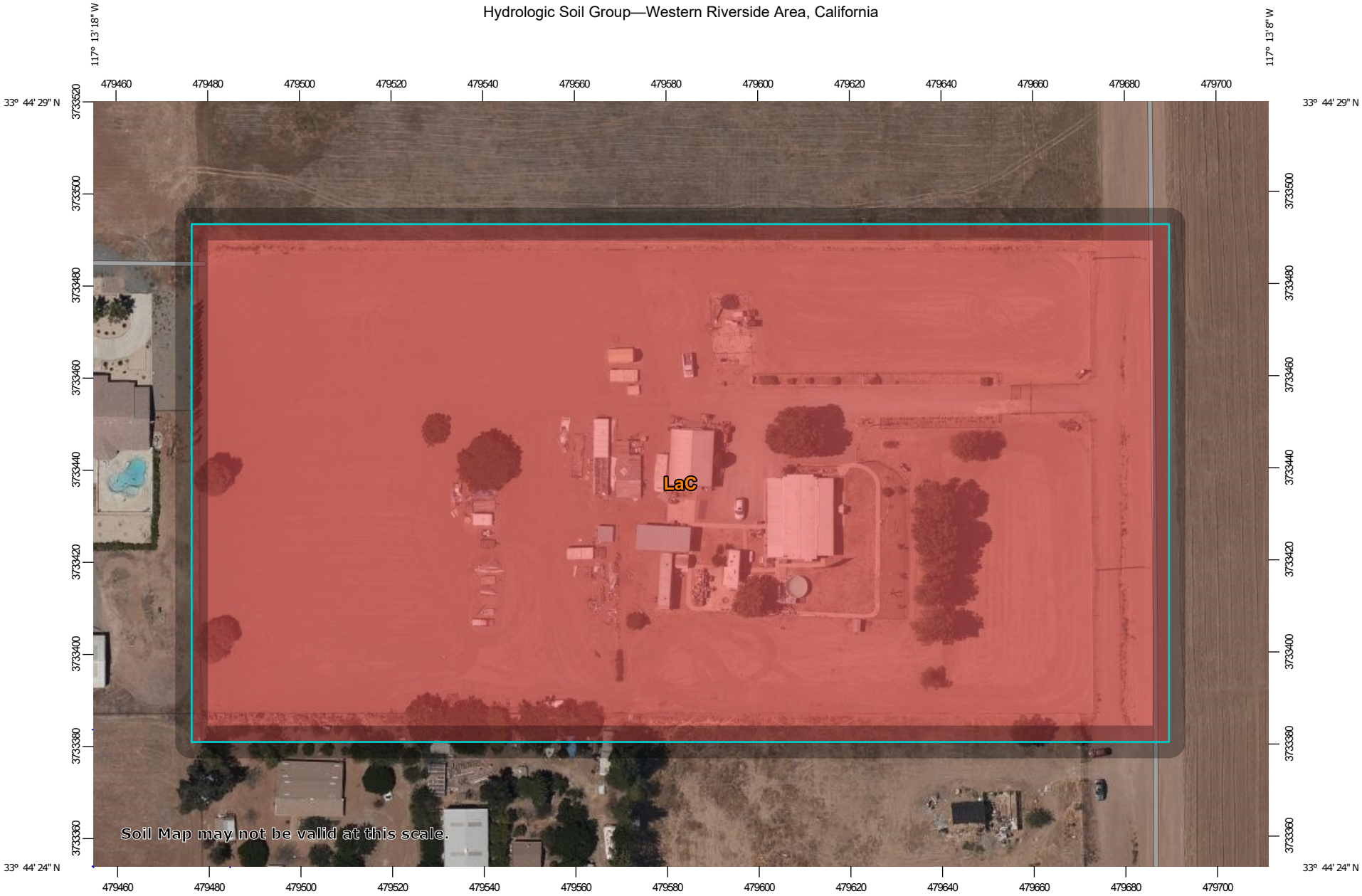
Initial area flow distance = 960.000(Ft.)
Top (of initial area) elevation = 66.300(Ft.)
Bottom (of initial area) elevation = 47.400(Ft.)
Difference in elevation = 18.900(Ft.)
Slope = 0.01969 s(percent)= 1.97
TC = k(0.530)*[(length^3)/(elevation change)]^0.2
Initial area time of concentration = 18.128 min.
Rainfall intensity = 2.013(In/Hr) for a 100.0 year storm
UNDEVELOPED (poor cover) subarea
Runoff Coefficient = 0.873
Decimal fraction soil group A = 0.000
Decimal fraction soil group B = 0.000
Decimal fraction soil group C = 0.000

```
Decimal fraction soil group D = 1.000
RI index for soil(AMC 3)  =  95.60
Pervious area fraction =  1.000; Impervious fraction =  0.000
Initial subarea runoff =      9.214(CFS)
Total initial stream area =        5.240(Ac.)
Pervious area fraction = 1.000
End of computations, total study area =            5.24 (Ac.)
The following figures may
be used for a unit hydrograph study of the same area.

Area averaged pervious area fraction(Ap) = 1.000
Area averaged RI index number =  89.0
```

APPENDIX F

REFERENCES



Map Scale: 1:1,170 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 15 30 60 90

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Western Riverside Area, California
Survey Area Data: Version 14, Sep 13, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 25, 2019—Jun 25, 2019

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
LaC	Las Posas loam, 2 to 8 percent slopes	D	6.0	100.0%
Totals for Area of Interest			**6.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOAA Atlas 14, Volume 6, Version 2
Location name: Menifee, California, USA*
Latitude: 33.7376°, Longitude: -117.2215°
Elevation: 1462.36 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.086** (0.072-0.104)	**0.123** (0.103-0.148)	**0.173** (0.144-0.210)	**0.216** (0.179-0.264)	**0.278** (0.222-0.352)	**0.329** (0.257-0.425)	**0.382** (0.291-0.508)	**0.440** (0.325-0.602)	**0.523** (0.370-0.747)	**0.591** (0.403-0.876)
10-min	**0.123** (0.103-0.149)	**0.176** (0.147-0.212)	**0.248** (0.207-0.301)	**0.310** (0.256-0.379)	**0.399** (0.318-0.505)	**0.471** (0.368-0.610)	**0.548** (0.417-0.728)	**0.631** (0.466-0.863)	**0.750** (0.530-1.07)	**0.848** (0.578-1.25)
15-min	**0.149** (0.125-0.180)	**0.213** (0.178-0.257)	**0.300** (0.250-0.364)	**0.375** (0.310-0.458)	**0.483** (0.385-0.611)	**0.570** (0.445-0.737)	**0.663** (0.504-0.880)	**0.763** (0.564-1.04)	**0.907** (0.641-1.30)	**1.02** (0.699-1.52)
30-min	**0.241** (0.202-0.291)	**0.344** (0.288-0.416)	**0.486** (0.405-0.588)	**0.607** (0.501-0.741)	**0.780** (0.623-0.988)	**0.922** (0.719-1.19)	**1.07** (0.815-1.42)	**1.23** (0.912-1.69)	**1.47** (1.04-2.10)	**1.66** (1.13-2.46)
60-min	**0.340** (0.285-0.410)	**0.484** (0.405-0.585)	**0.684** (0.570-0.829)	**0.854** (0.706-1.04)	**1.10** (0.877-1.39)	**1.30** (1.01-1.68)	**1.51** (1.15-2.01)	**1.74** (1.28-2.38)	**2.07** (1.46-2.95)	**2.34** (1.59-3.46)
2-hr	**0.508** (0.425-0.612)	**0.687** (0.574-0.829)	**0.928** (0.774-1.13)	**1.13** (0.935-1.38)	**1.42** (1.13-1.79)	**1.64** (1.28-2.13)	**1.88** (1.43-2.50)	**2.13** (1.57-2.91)	**2.48** (1.75-3.54)	**2.76** (1.88-4.09)
3-hr	**0.623** (0.522-0.752)	**0.827** (0.692-1.00)	**1.10** (0.918-1.33)	**1.33** (1.10-1.63)	**1.65** (1.31-2.09)	**1.90** (1.48-2.46)	**2.16** (1.64-2.86)	**2.43** (1.79-3.32)	**2.81** (1.99-4.01)	**3.11** (2.12-4.60)
6-hr	**0.883** (0.739-1.07)	**1.16** (0.965-1.40)	**1.52** (1.26-1.84)	**1.81** (1.50-2.22)	**2.22** (1.77-2.81)	**2.54** (1.98-3.29)	**2.87** (2.18-3.81)	**3.21** (2.37-4.39)	**3.68** (2.60-5.26)	**4.05** (2.76-6.00)
12-hr	**1.18** (0.984-1.42)	**1.54** (1.29-1.86)	**2.03** (1.69-2.46)	**2.43** (2.01-2.97)	**2.98** (2.38-3.77)	**3.40** (2.66-4.41)	**3.84** (2.92-5.10)	**4.30** (3.17-5.87)	**4.92** (3.48-7.02)	**5.41** (3.69-8.01)
24-hr	**1.54** (1.36-1.78)	**2.06** (1.82-2.38)	**2.74** (2.42-3.18)	**3.31** (2.89-3.86)	**4.08** (3.46-4.92)	**4.69** (3.89-5.77)	**5.32** (4.31-6.70)	**5.97** (4.71-7.72)	**6.87** (5.20-9.25)	**7.58** (5.55-10.6)
2-day	**1.80** (1.59-2.08)	**2.45** (2.17-2.84)	**3.33** (2.93-3.86)	**4.06** (3.55-4.74)	**5.08** (4.30-6.12)	**5.88** (4.88-7.23)	**6.71** (5.44-8.46)	**7.59** (5.99-9.82)	**8.82** (6.68-11.9)	**9.80** (7.18-13.6)
3-day	**1.92** (1.70-2.22)	**2.65** (2.34-3.07)	**3.64** (3.21-4.22)	**4.48** (3.91-5.23)	**5.65** (4.78-6.81)	**6.58** (5.46-8.10)	**7.56** (6.12-9.52)	**8.60** (6.78-11.1)	**10.1** (7.62-13.5)	**11.2** (8.23-15.6)
4-day	**2.06** (1.82-2.37)	**2.87** (2.53-3.31)	**3.97** (3.50-4.60)	**4.90** (4.29-5.73)	**6.22** (5.27-7.50)	**7.28** (6.04-8.96)	**8.39** (6.80-10.6)	**9.58** (7.56-12.4)	**11.3** (8.53-15.2)	**12.6** (9.24-17.6)

7-day	**2.30** (2.03-2.65)	**3.25** (2.87-3.76)	**4.57** (4.02-5.29)	**5.69** (4.97-6.64)	**7.28** (6.17-8.78)	**8.57** (7.11-10.5)	**9.94** (8.06-12.5)	**11.4** (9.00-14.8)	**13.5** (10.2-18.2)	**15.2** (11.1-21.2)
10-day	**2.41** (2.13-2.78)	**3.45** (3.04-3.98)	**4.88** (4.30-5.65)	**6.11** (5.34-7.13)	**7.87** (6.66-9.49)	**9.30** (7.72-11.4)	**10.8** (8.78-13.6)	**12.5** (9.84-16.1)	**14.8** (11.2-20.0)	**16.8** (12.3-23.4)
20-day	**2.83** (2.50-3.27)	**4.10** (3.62-4.74)	**5.89** (5.19-6.83)	**7.45** (6.52-8.70)	**9.73** (8.24-11.7)	**11.6** (9.64-14.3)	**13.6** (11.1-17.2)	**15.9** (12.5-20.5)	**19.1** (14.5-25.7)	**21.8** (16.0-30.4)
30-day	**3.33** (2.95-3.85)	**4.83** (4.27-5.58)	**6.97** (6.14-8.07)	**8.85** (7.73-10.3)	**11.6** (9.84-14.0)	**14.0** (11.6-17.2)	**16.5** (13.4-20.8)	**19.3** (15.2-25.0)	**23.4** (17.8-31.6)	**26.9** (19.7-37.5)
45-day	**3.88** (3.43-4.48)	**5.57** (4.92-6.43)	**8.01** (7.06-9.28)	**10.2** (8.91-11.9)	**13.5** (11.4-16.2)	**16.2** (13.5-20.0)	**19.3** (15.6-24.3)	**22.7** (17.9-29.4)	**27.9** (21.1-37.6)	**32.3** (23.6-45.0)
60-day	**4.46** (3.95-5.15)	**6.31** (5.57-7.29)	**9.01** (7.94-10.4)	**11.4** (10.0-13.4)	**15.2** (12.8-18.3)	**18.3** (15.2-22.6)	**21.9** (17.7-27.6)	**25.9** (20.4-33.5)	**32.0** (24.2-43.1)	**37.3** (27.3-51.9)

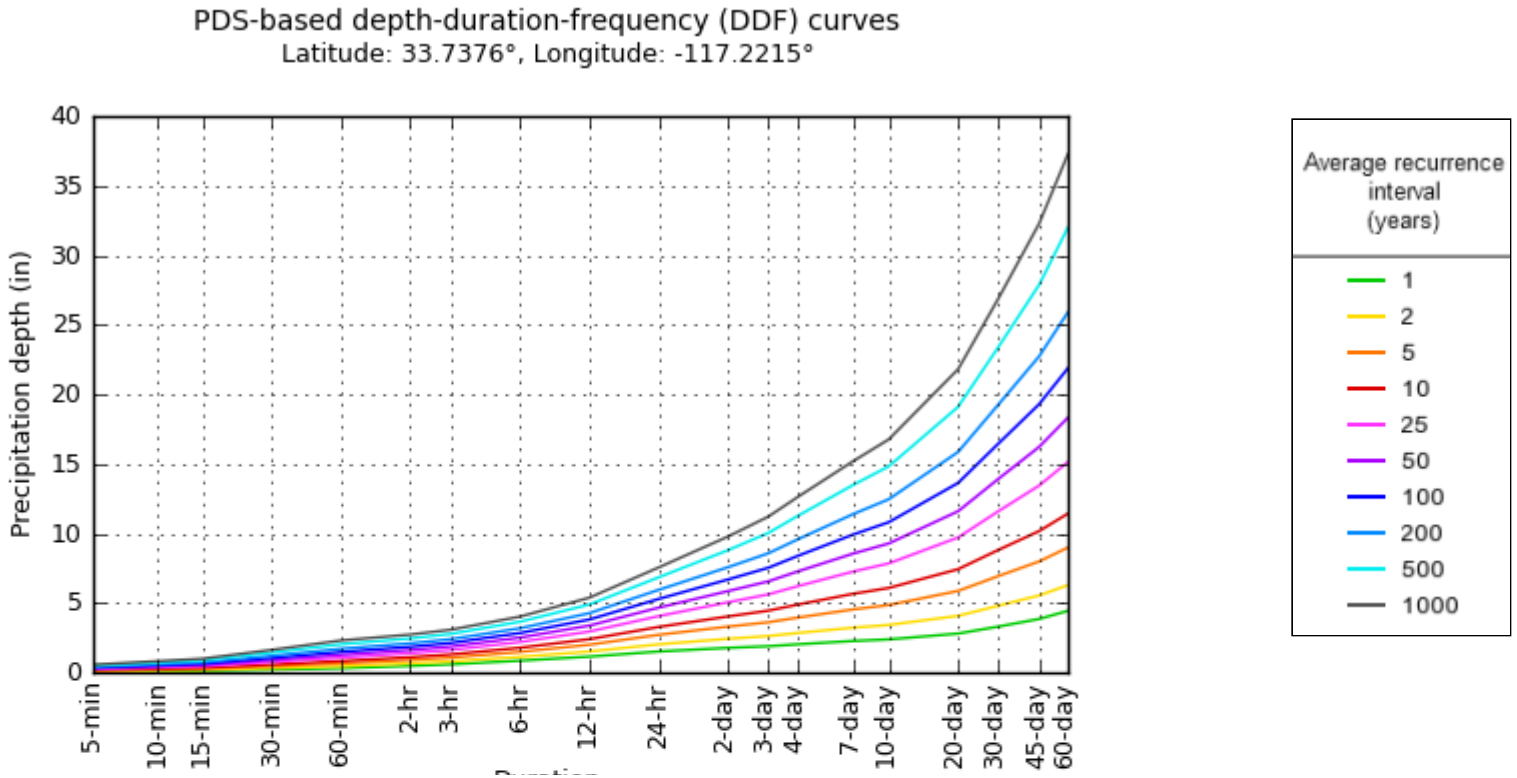
[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

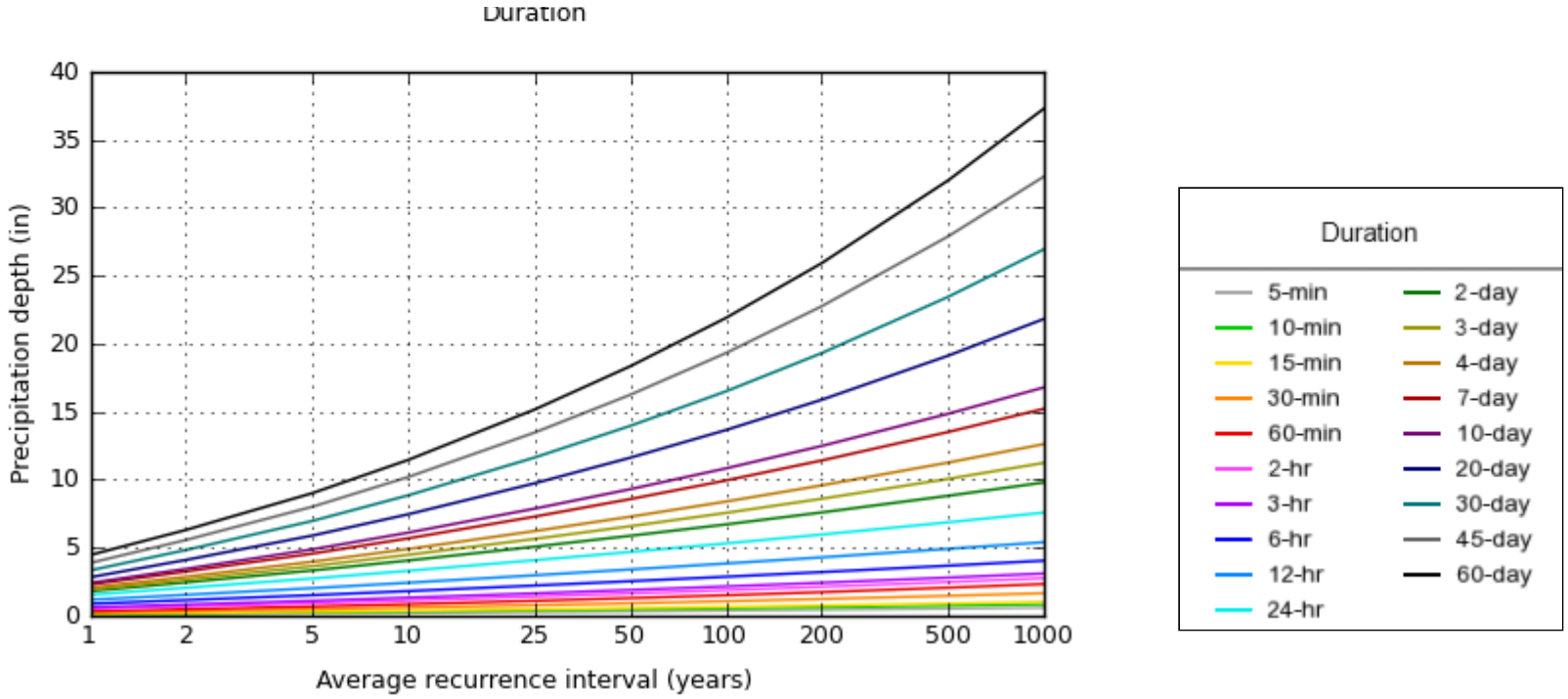
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical



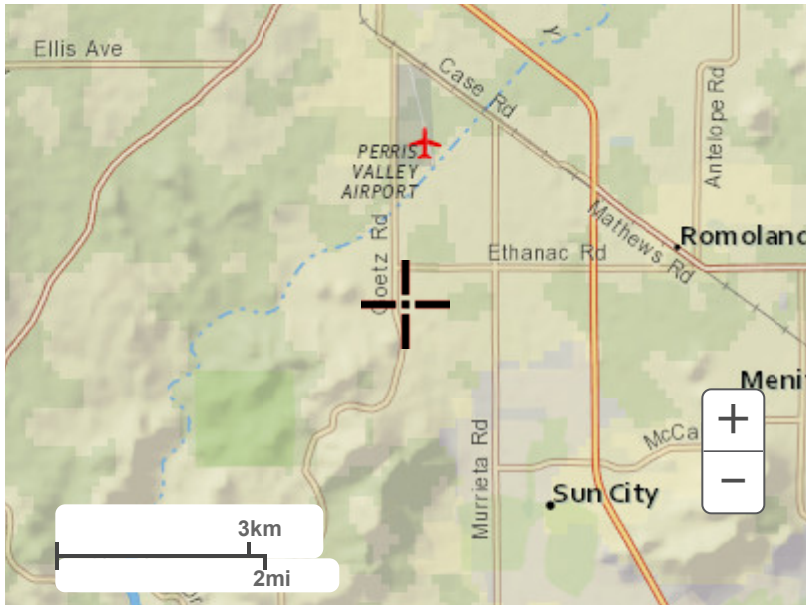


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Maps & aerials

Small scale terrain



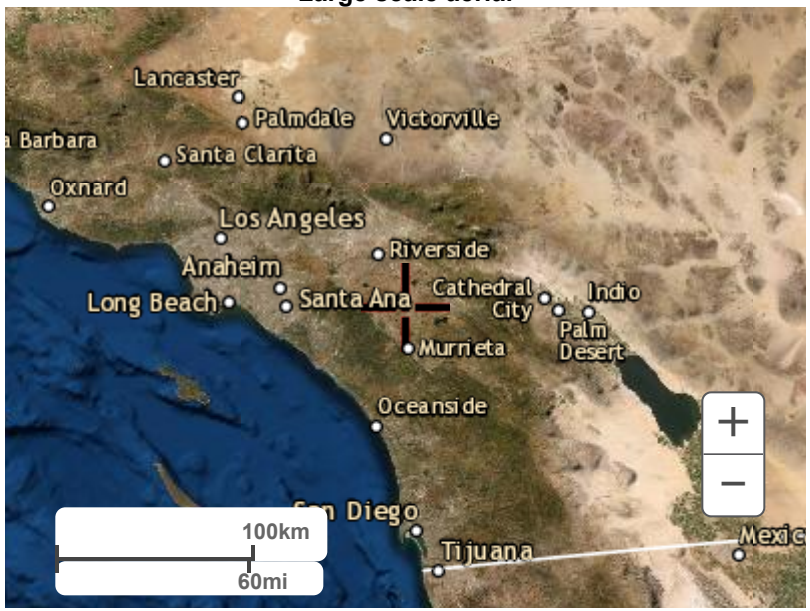
Large scale terrain



Large scale map



Large scale aerial



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US Department of Commerce
National Oceanic and Atmospheric Administration
National Weather Service
National Water Center
1325 East West Highway
Silver Spring, MD 20910
Questions?: HDSC.Questions@noaa.gov

Disclaimer

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
NATURAL COVERS -					
Barren (Rockland, eroded and graded land)		78	86	91	93
Chaparrel, Broadleaf (Manzonita, ceanothus and scrub oak)	Poor	53	70	80	85
	Fair	40	63	75	81
	Good	31	57	71	78
Chaparrel, Narrowleaf (Chamise and redshank)	Poor	71	82	88	91
	Fair	55	72	81	86
Grass, Annual or Perennial	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Meadows or Cienegas (Areas with seasonally high water table, principal vegetation is sod forming grass)	Poor	63	77	85	88
	Fair	51	70	80	84
	Good	30	58	72	78
Open Brush (Soft wood shrubs - buckwheat, sage, etc.)	Poor	62	76	84	88
	Fair	46	66	77	83
	Good	41	63	75	81
Woodland (Coniferous or broadleaf trees predominate. Canopy density is at least 50 percent)	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	28	55	70	77
Woodland, Grass (Coniferous or broadleaf trees with canopy density from 20 to 50 percent)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
URBAN COVERS -					
Residential or Commercial Landscaping (Lawn, shrubs, etc.)	Good	32	56	69	75
Turf (Irrigated and mowed grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
AGRICULTURAL COVERS -					
Fallow (Land plowed but not tilled or seeded)		76	85	90	92

RCFC & WCD
HYDROLOGY MANUAL

RUNOFF INDEX NUMBERS FOR PERVIOUS AREA

PLATE D-5.5 (1 of 2)

RUNOFF INDEX NUMBERS OF HYDROLOGIC SOIL-COVER COMPLEXES FOR PERVIOUS AREAS-AMC II

Cover Type (3)	Quality of Cover (2)	Soil Group A	B	C	D
AGRICULTURAL COVERS (cont.) -					
Legumes, Close Seeded (Alfalfa, sweetclover, timothy, etc.)	Poor	66	77	85	89
	Good	58	72	81	85
Orchards, Deciduous (Apples, apricots, pears, walnuts, etc.)		See Note 4			
Orchards, Evergreen (Citrus, avocados, etc.)	Poor	57	73	82	86
	Fair	44	65	77	82
	Good	33	58	72	79
Pasture, Dryland (Annual grasses)	Poor	67	78	86	89
	Fair	50	69	79	84
	Good	38	61	74	80
Pasture, Irrigated (Legumes and perennial grass)	Poor	58	74	83	87
	Fair	44	65	77	82
	Good	33	58	72	79
Row Crops (Field crops - tomatoes, sugar beets, etc.)	Poor	72	81	88	91
	Good	67	78	85	89
Small Grain (Wheat, oats, barley, etc.)	Poor	65	76	84	88
	Good	63	75	83	87
Vineyard		See Note 4			

Notes:

1. All runoff index (RI) numbers are for Antecedent Moisture Condition (AMC) II.

2. Quality of cover definitions:
   Poor-Heavily grazed or regularly burned areas. Less than 50 percent of the ground surface is protected by plant cover or brush and tree canopy.
   Fair-Moderate cover with 50 percent to 75 percent of the ground surface protected.
   Good-Heavy or dense cover with more than 75 percent of the ground surface protected.

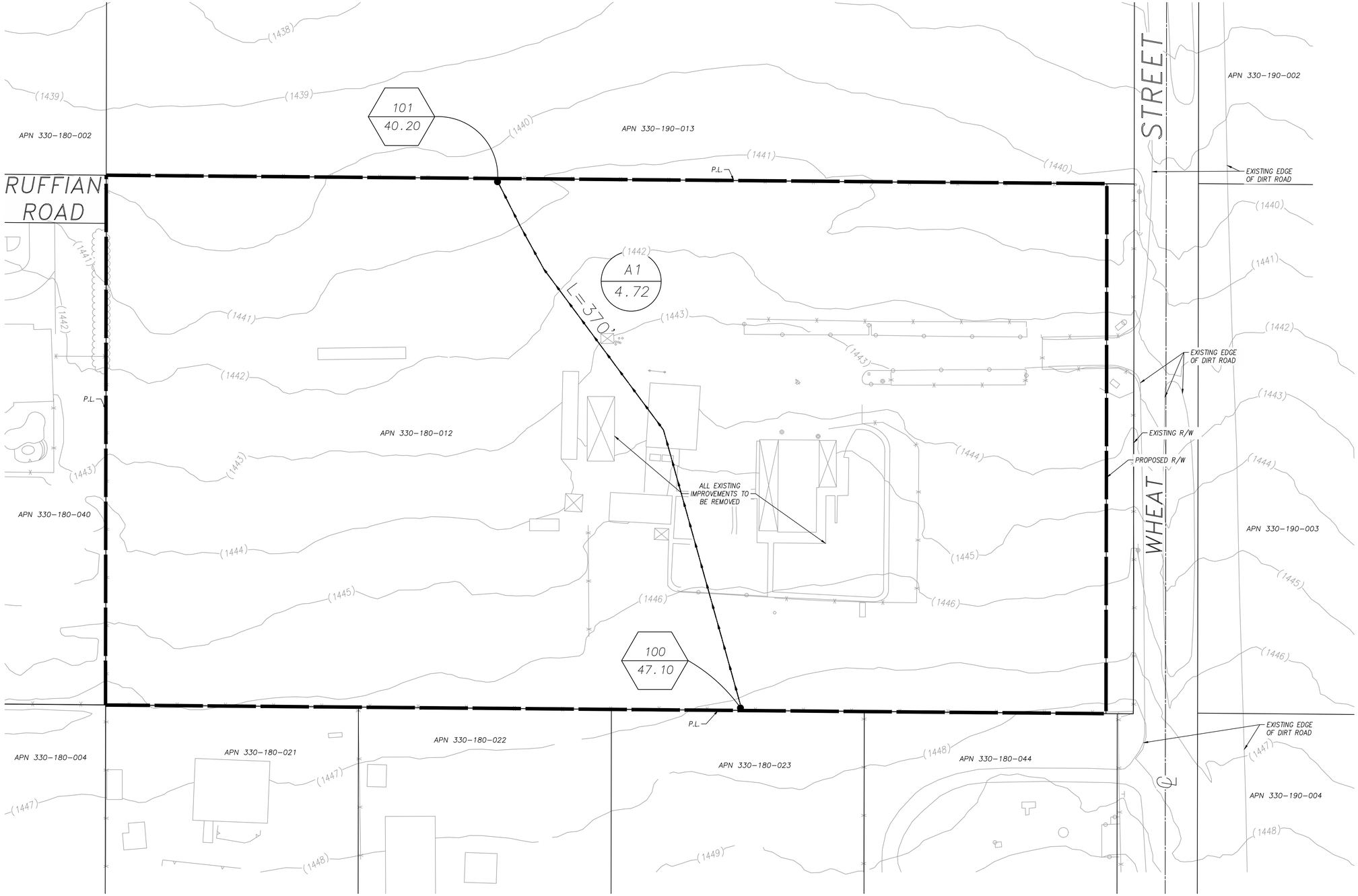
3. See Plate C-2 for a detailed description of cover types.

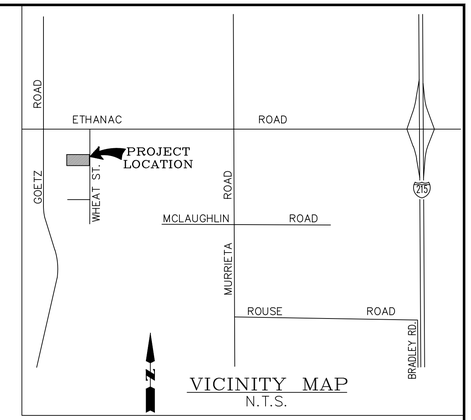
4. Use runoff index numbers based on ground cover type. See discussion under "Cover Type Descriptions" on Plate C-2.

5. Reference Bibliography item 17.

EXHIBIT A

HYDROLOGY MAP (EXISTING CONDITION; RATIONAL METHOD)





LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

N

GRAPHIC SCALE

30 0 15 30 60

1" = 30'

EXHIBIT "A"

RATIONAL METHOD HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES EXISTING CONDITION

CASC Engineering and Consulting

1470 EAST COOLEY DRIVE, COLTON, CA 92324

PH. (909) 783-0101 FAX (909) 783-0108

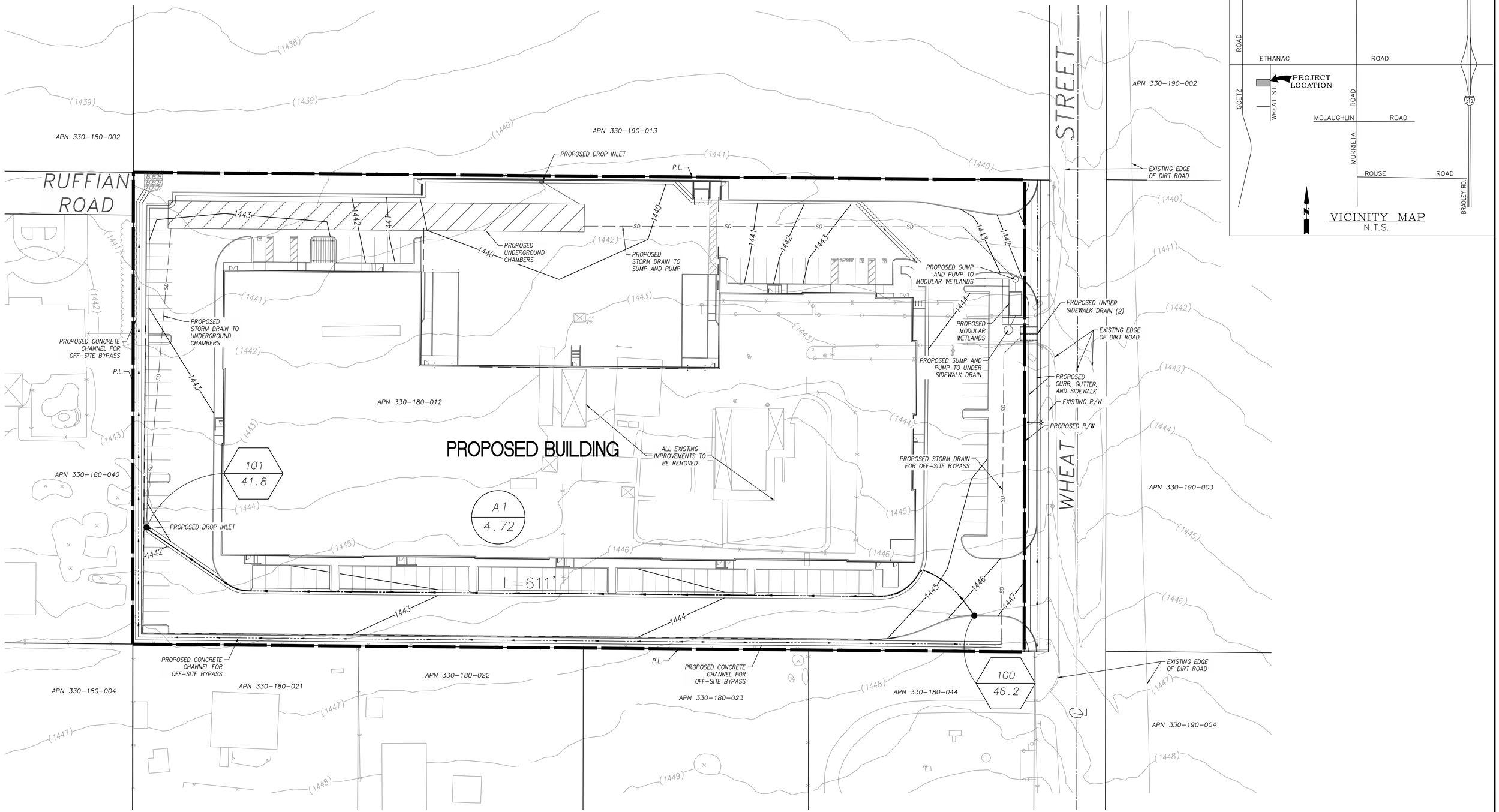
www.cei-casc.com

Drawing Name: G:\1494-0012 CDFE, Wheat Street Menifee #2\Study Drainage\Hydrology Maps\1494-0012 HYDROLOGY MAP.dwg

Last Opened: Jun 15, 2022 - 10:41am by rlore

EXHIBIT B

HYDROLOGY MAP (PROPOSED CONDITION; RATIONAL METHOD)



LEGEND

- XXX / XXXX — NODE/CONCENTRATION POINT ELEVATION
- XX / X.XX — SUBAREA ACRES
- L=XXX' — MAIN FLOW PATH
- FLOW PATH
- WATERSHED BOUNDARY

GRAPHIC SCALE
30 0 15 30 60
1" = 30'

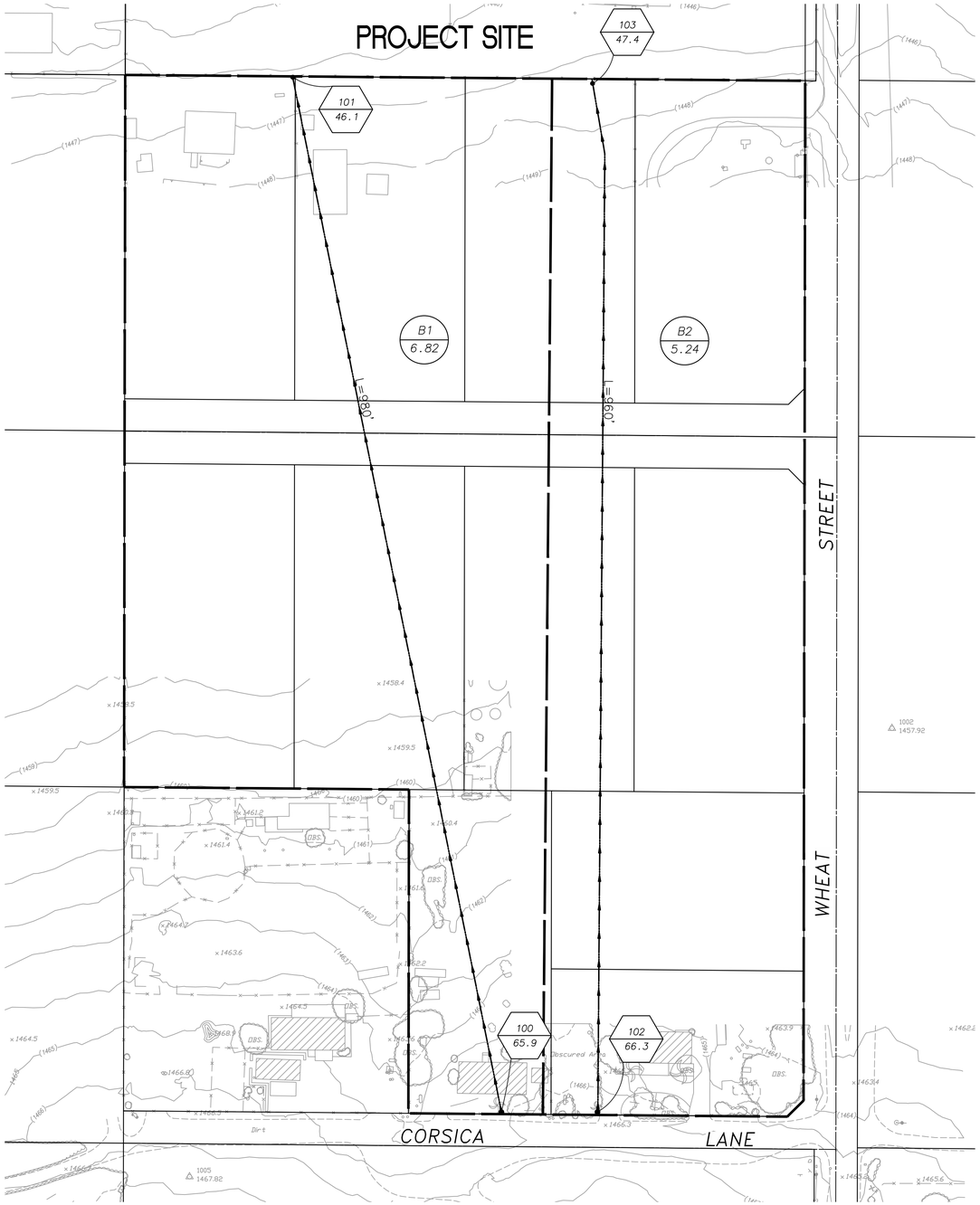
EXHIBIT "B"
RATIONAL METHOD
HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES
PROPOSED CONDITION

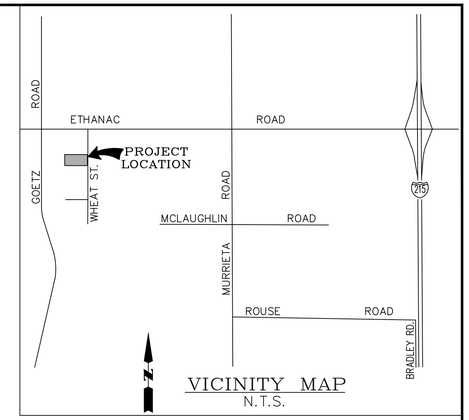
CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-cosc.com

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Last Opened: Jun 30, 2022 - 12:44pm by cces

EXHIBIT C

HYDROLOGY MAP (OFF-SITE; RATIONAL METHOD)





LEGEND

XXX / XXXX — NODE/CONCENTRATION POINT / ELEVATION

XX / X.XX — SUBAREA / ACRES

L=XXX' — MAIN FLOW PATH

FLOW PATH

WATERSHED BOUNDARY

N

GRAPHIC SCALE

30 0 15 30 60

1" = 30'

EXHIBIT "C"

RATIONAL METHOD

HYDROLOGY MAP FOR INDUSTRIAL WAREHOUSES

EXISTING CONDITION - OFF SITE

CASC
Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cal-casc.com

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APPENDIX I6

WHEAT STREET WATER QUALITY MANAGEMENT PLAN

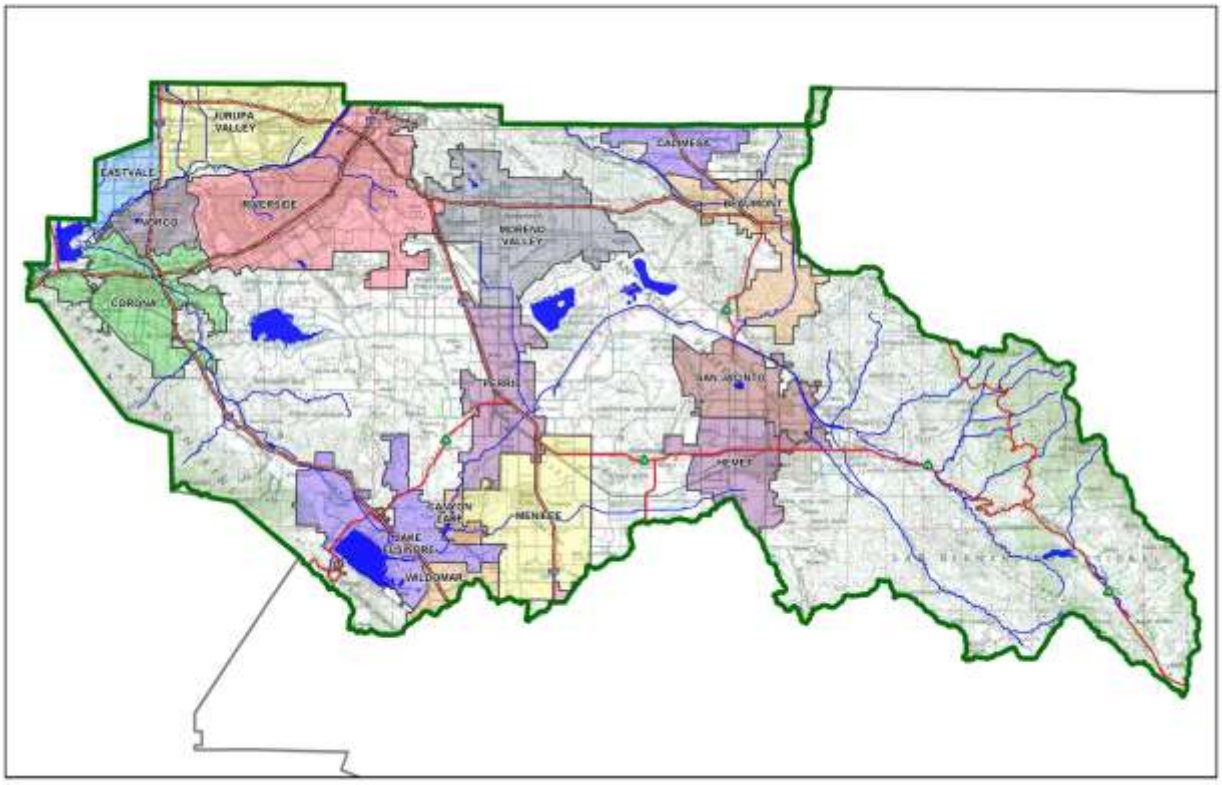
Project Specific Water Quality Management Plan

*A Template for Projects located within the **Santa Ana Watershed** Region of Riverside County*

Project Title: Wheat Street, Menifee No. 2

Development No: TBD

Design Review/Case No: PLN22-0100 PP, APN: 330-180-012



☒ **Preliminary**
☐ **Final**

Original Date Prepared: March 25, 2022

Revision Date(s): June 30, 2022

August 11, 2022

Prepared for Compliance with Regional Board Order No. **R8-2010-0033**
Template revised June 30, 2016

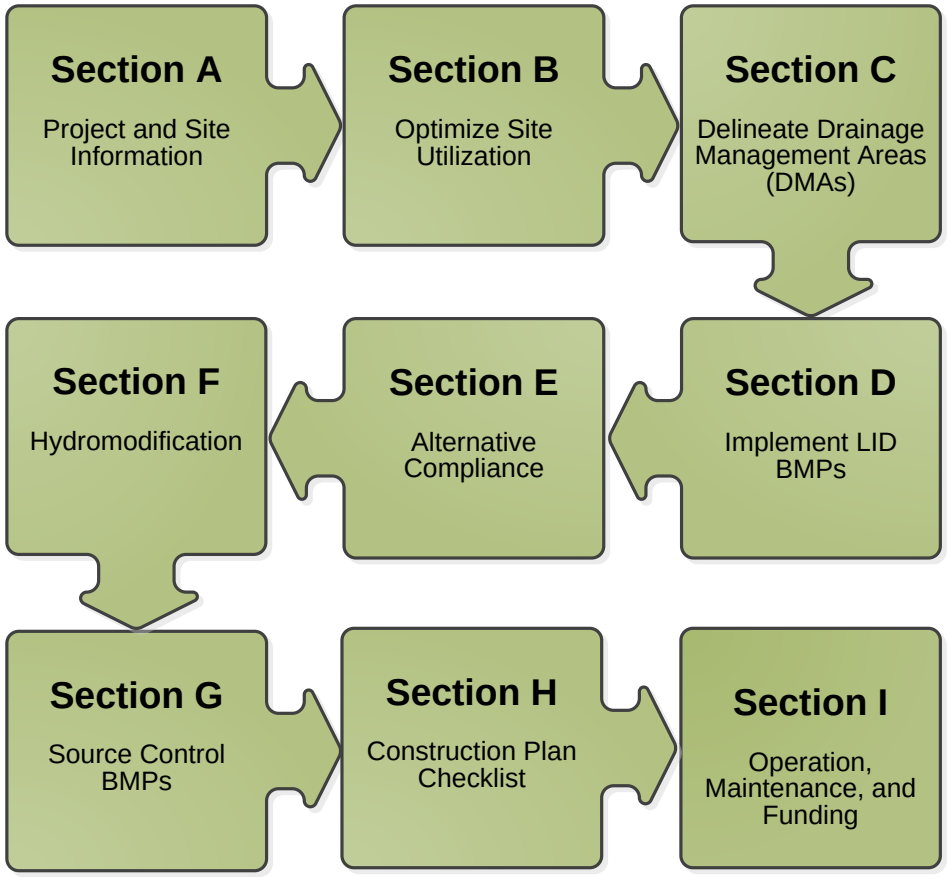
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1470 E. Cooley Drive
Colton, CA 92324
(909) 783-0101 x1610, Mgentile@cascinc.com
Attn: Michael Gentile, PE

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 Mark Bachli by CASC Engineering and Consulting for the Wheat Street, Menifee Industrial Buildings.

This WQMP is intended to comply with the requirements of Riverside County for Ordinance No. 754.2 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 Riverside County Water Quality Ordinance (Municipal Code Section 13.12).

"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
Mark Bachli	
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
Michael J. Gentile PE, QSD/P	Senior Engineer
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:	Industrial
Planning Area:	N/A
Community Name:	Menifee
Development Name:	Wheat Street, Menifee No. 2
PROJECT LOCATION	
Latitude & Longitude (DMS): 33°44'26.47"N 117°13'14.17"W	
Project Watershed and Sub-Watershed: Santa Ana & San Jacinto	
Gross Acres: 4.77 Acres APN(s): 330-180-012 Map Book and Page No.: MB 14/91 & PM 86/31	
PROJECT CHARACTERISTICS	
Proposed or Potential Land Use(s)	Industrial
Proposed or Potential SIC Code(s)	1541
Area of Impervious Project Footprint (SF)	207,955 SF
Total Area of proposed Impervious Surfaces within the Project Footprint (SF)/or Replacement	187,159 SF
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)	0
Is the project located within any MSHCP Criteria Cell?	☐ Y ☒ N
If so, identify the Cell number:	N/A
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)	N/A
What is the Water Quality Design Storm Depth for the project?	0.60"

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.

Project Description:.

The Wheat Street, Menifee No. 2 Project is located in the City of Menifee, County of Riverside, California. The site is located approximately 830 feet southeast of the intersection of Goetz Road and Ethanac Road in the City of Menifee. The site is bounded by single family residences to the west and south. The industrial Project and associated parking and landscaping areas are approximately 4.77 acres in size. Topographically, site elevations range from approximately 1439.00 feet to 1451.00 feet above Mean Sea Level (MSL).

APN 330-180-012 is currently developed with a single family residence. Existing improvements to the parcel will be removed as part of the project. The existing project currently drains to the North of Wheat St. The project proposes to construct an industrial warehouse building with associated parking, landscape, and access points. The project will add approximately 187,159 square feet or 4.29 acres of impervious area.

The proposed design consists of one on-site Drainage Area (DA). Within the Drainage Area there is a proposed building of 87,676 sf. The Drainage Area will drain via sheet flow and/or curbs and gutters to proposed drop inlets located throughout the project. Flows captured by the drop inlet will be directed via proposed storm drain to proposed underground detention chambers. The chambers will dewater via proposed storm drains that will connect to proposed sump and pumps. The sump and pumps will pump flows to the proposed Modular Wetlands Systems (MWS), the treated flows will be directed to a public storm drain line through the project site. Flows from the Drainage Area will be directed North toward Wheat Street.

The proposed off-site street improvements will consist of curb, gutters, under sidewalk drains, street expansion and road pavements.

The proposed project will be fully addressed by LID Principles and a Modular Wetlands System (MWS).

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
Canyon Lake	Nutrients, Pathogens	MUN, AGR, GWR, REC1, REC2, COMM, WARM, WILD	N/A
Lake Elsinore	Nutrients, Organic Enrichments, Low Dissolved Oxygen, PCBs, Sediment Toxicity, Unknown Toxicity	REC1, REC2, WARM, WILD, MUN	N/A

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)*	☐ 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?

Yes, the preexisting site conditions drained towards the north into Wheat St. The planned grading will keep the same drainage pattern by conveying flows northerly into the proposed BMPs, and discharge flows northerly into Wheat St.

Did you identify and protect existing vegetation? If so, how? If not, why?

No, the site was previously mass graded and contains little to no vegetation.

Did you identify and preserve natural infiltration capacity? If so, how? If not, why?

No, per the Geotechnical Report (Appendix 3) infiltration rates did not meet the BMP criteria, and therefore infiltration was determined to be infeasible. Per the BMP hierarchy in the Guidance Manual, and per a

letter from the geotechnical engineer stating infiltration rates were too low for bioretention, a Modular Wetlands System was selected on-site, which then use a pump and sump for off-site flows.

Did you identify and minimize impervious area? If so, how? If not, why?

No, the project proposes a large industrial large building and multiple parking lots so impervious area could not be minimized. Landscaped areas were added along the perimeter of the project site.

Did you identify and disperse runoff to adjacent pervious areas? If so, how? If not, why?

No, due to the site being over 85% impervious dispersing runoff to pervious areas is infeasible and therefore flow through biotreatment BMPs were selected.

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 1A	Landscaping	20,795	Type D
DMA 1B	Buildings/Roofs	87,676	Type D
DMA 1C	Asphalt Concrete	99,483	Type 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)
N/A			

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]
N/A						

$$[D] = [B] + \frac{[B] \cdot [C]}{[A]}$$

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	DMA name /ID	Area (square feet)	Ratio
	[A]		[B]	[C] = [A] x [B]		[D]	[C]/[D]
N/A							

Table C.5 Type 'D', Areas Draining to BMPs

DMA Name or ID	BMP Name or ID
DMA 1A	MWS
DMA 1B	MWS
DMA 1C	MWS

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: all DMAs		
…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: 0.48 Acres

Type of Landscaping (Conservation Design or Active Turf): Conservation Design

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: 4.29 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: 0.79

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: 3.39 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)
3.39 Acres	0.48 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: 172

Project Type: Industrial

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: 4.29 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: 172

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: 738

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)
738	172

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.

N/A

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: N/A

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: N/A

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: N/A

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: N/A

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)**
N/A	N/A

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 1A	☐	☐	☐	☒	☐
DMA 1B	☐	☐	☐	☒	☐
DMA 1C	☐	☐	☐	☒	☐

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.

*Per the letter Dated February 14, 2022 from the Geotechnical Study, an infiltration rate of 0.05 and 0.21 inches per hour should be used. See Appendix 3 for clarification. Due to site constraints a bioretention basin would require more square footage than available. Therefore, bioretention is deemed infeasible making biotreatment the only feasible option.

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	*BMP 1 – MWS*		
	[A]		[B]	[C]	[A] x [C]			
DMA 1A	*20,795*	*Ornamental Landscaping*	*0.1*	*0.11*	*2,297*	*Design Storm Depth (in.)*	*Design capture Volume,* ***VBMP*** *(cubic feet)*	*Proposed Volume on plans (cubic feet)*
DMA 1B	*87,676*	*Buildings/ Roofs*	*1.0*	*0.89*	78,207			
DMA 1C	*99,484*	*Asphalt Concrete*	*1.0*	*0.89*	*88,739.7*			
	207,955				169,243.7	0.60	8,462.2	***24,155***

[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

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.

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]
MWS-L-8-16-V	Sediment, metals, nutrients, pesticides, oil and grease, trash and debris	High

[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	N/A	INSERT VALUE	INSERT VALUE
Volume (Cubic Feet)	N/A	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:

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.

Underground detention chambers will be utilized to contain runoff and slowly release runoff via pump & modular wetlands system for the Drainage Area. Proposed conditions will mimic pre-existing conditions by utilization of the detention chambers and pump. Project will meet condition C of section F.2. See Appendix 7 for preliminary 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 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	Interior floor drains will be plumbed to sanitary sewer.	Inspect and maintain drains to prevent blockages and overflow.
D1. Landscape / Outdoor Pesticide Use	Landscape plans will 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. Pest-resistant plans will be used adjacent to hardscape. The landscape plans will consider plants appropriate to the site soils, slopes, climate, sun, wind, rain, land use, air movement, ecological consistency, and plant interactions.	Maintain landscaping only using minimum pesticides, when needed. See Appendix 10 for "Landscape and Gardening" brochure by RCFlood. Provide Integrated Pest Management (IPM) information to new owners, lessees and operators upon occupancy and annually thereafter. IPM is an effective and environmentally sensitive approach to pest management.
J. Refuse Areas	Site refuse will be handled by contractor on a weekly basis. Signs will be posted on or near dumpsters with the words "Do not dump hazardous materials here" or similar.	A minimum of two receptacles will be provided and located indoors. Receptacles are to be inspected daily and repairs or replacements to leaky receptacles will be completed immediately. Receptacles are to remain covered when not in use. Dumping of liquid or hazardous wastes is prohibited. A "no hazardous materials" sign will be posted. Spills will be cleaned immediately upon discovery. Spill control materials will be available onsite. See Appendix 10 for CASQA fact sheet SC-34 for "Waste Handling and Disposal."

K. Industrial processes	All process activities to be performed indoors. No processes to drain to exterior or to storm drain system.	See Appendix 10 for CASQA fact sheet SC-10 for "Non-Stormwater Discharges"
M. Loading Docks		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
O. Miscellaneous Drain or Wash Water or Other Sources Condensate Drain lines Roofing, gutters, and trim	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. Avoid roofing, gutters, and trim made of copper or other unprotected metals that may leach into runoff.	
P. Plazas, sidewalks, and parking lots		Sweep plazas, sidewalks, and parking lots monthly 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)
1	MWS	C-1	33.741022°, -117.219532°

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.

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: Maintenance will be funded by owner. A complete maintenance agreement will be submitted with FWQMP.

Will the proposed BMPs be maintained by a Home Owners' Association (HOA) or Property Owners Association (POA)?

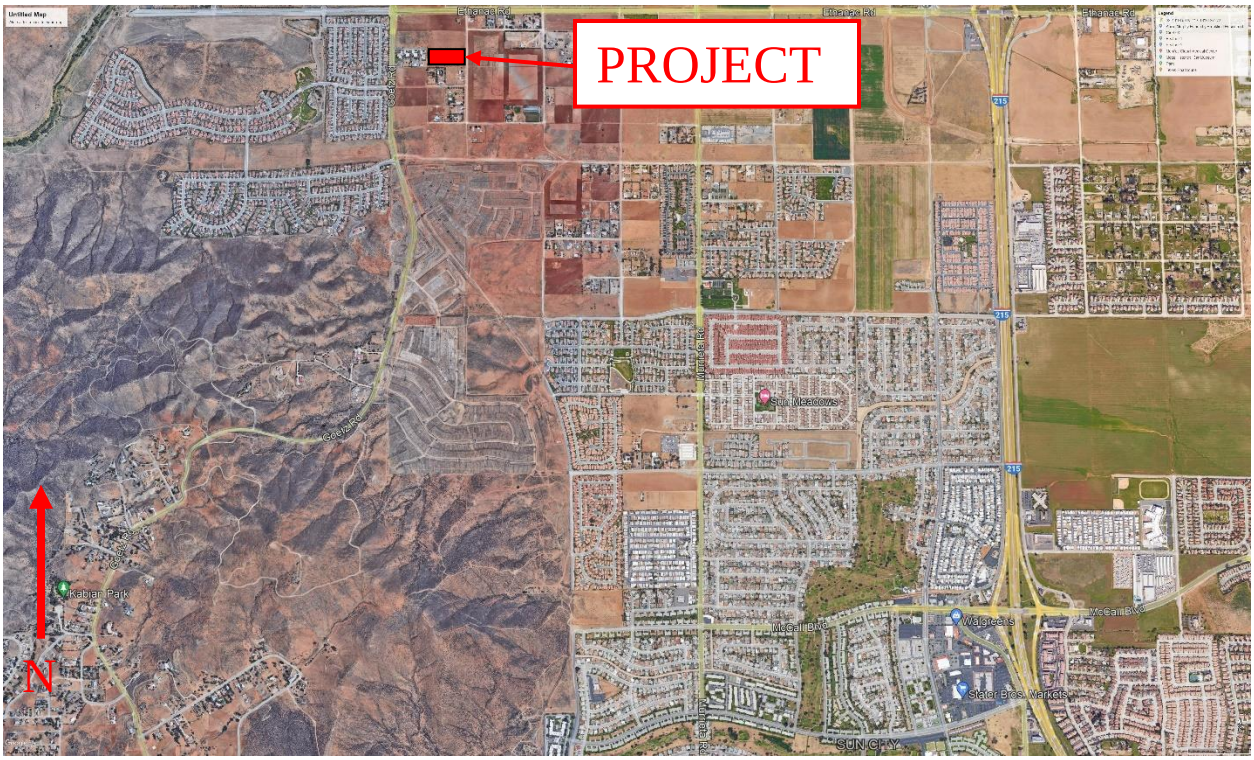
☐ Y ☒ N

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.

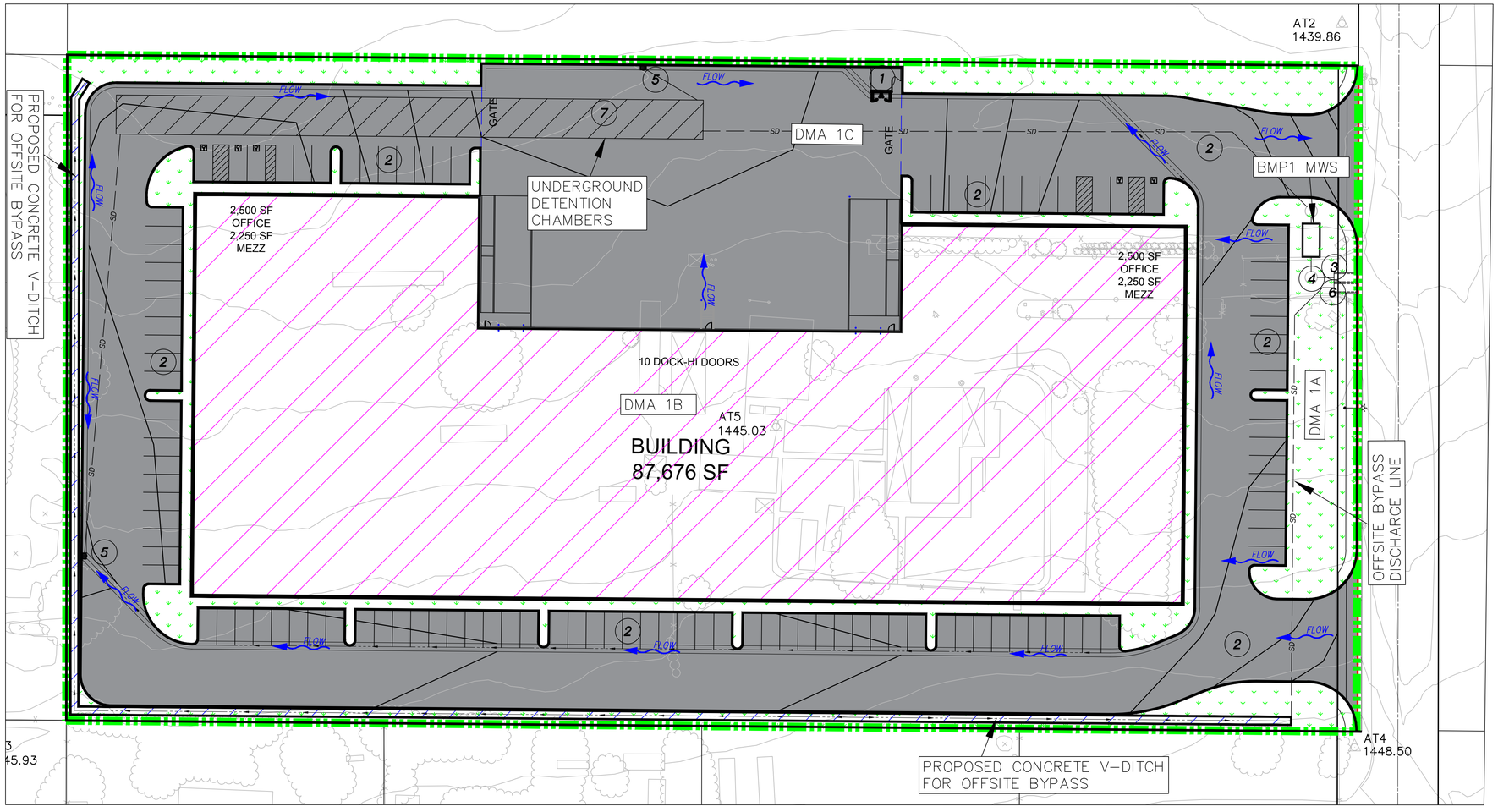
Appendix 1: Maps and Site Plans

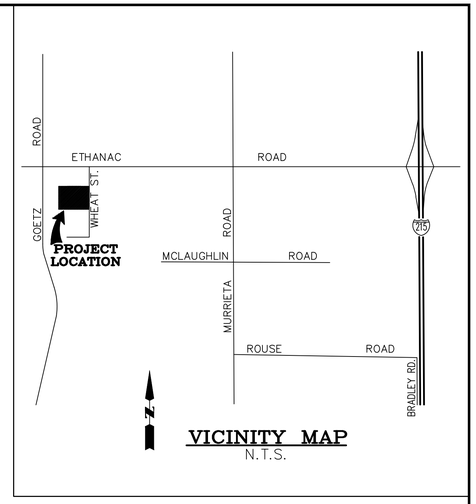
Location Map, WQMP Site Plan and Receiving Waters Map

REGIONAL VICINITY MAP



WATER QUALITY MANAGEMENT PLAN
WHEAT STREET MENIFEE INDUSTRIAL BUILDING
APN: 330-180-012
CITY OF MENIFEE, CA





VICINITY MAP
N.T.S.

SOURCE CONTROL BMPs

1	SD-32	TRASH ENCLOSURES
2	SC-71	PARKING LOT CLEANING
3	SC-73	LANDSCAPE MAINTENANCE
4	SD-12	EFFICIENT IRRIGATION
5	SD-13	STORM DRAIN SIGNAGE
6	N-3	LANDSCAPE MANAGEMENT
7	N-4	BMP MAINTENANCE

LEGEND

- DMA — DRAINAGE MANAGEMENT AREA
- DRAINAGE AREA BOUNDARY
- PARKING LOT (IMPERVIOUS) AREA
- ROOFS / BUILDING (IMPERVIOUS)
- LANDSCAPE AREA
- FLOW — FLOW DIRECTION

DMA CLASSIFICATIONS

DMA NAME	SURFACE TYPE	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	DMA TYPE	BMP TYPE
DMA 1A	LANDSCAPING	0	20,795	TYPE D	BIOTREATMENT MWS-L-8-16-V
DMA 1B	BUILDINGS/ROOFS	87,676	0		
DMA 1C	ASPHALT CONCRETE	99,483	0		

DESIGN CAPTURE VOLUME: 8462 CF.
UNDERGROUND DETENTION CHAMBER VOL. = 24,155 CF.

TOTAL AREAS:

IMPERVIOUS AREA:	187,159	SF	4.29 AC
PERVIOUS AREA:	20,795	SF	0.48 AC
TOTAL AREA:	207,955	SF	4.77 AC

5 SD-13 DETAIL
NOT TO SCALE

N
30 0 15 30 60
1" = 30'

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cei-casc.com

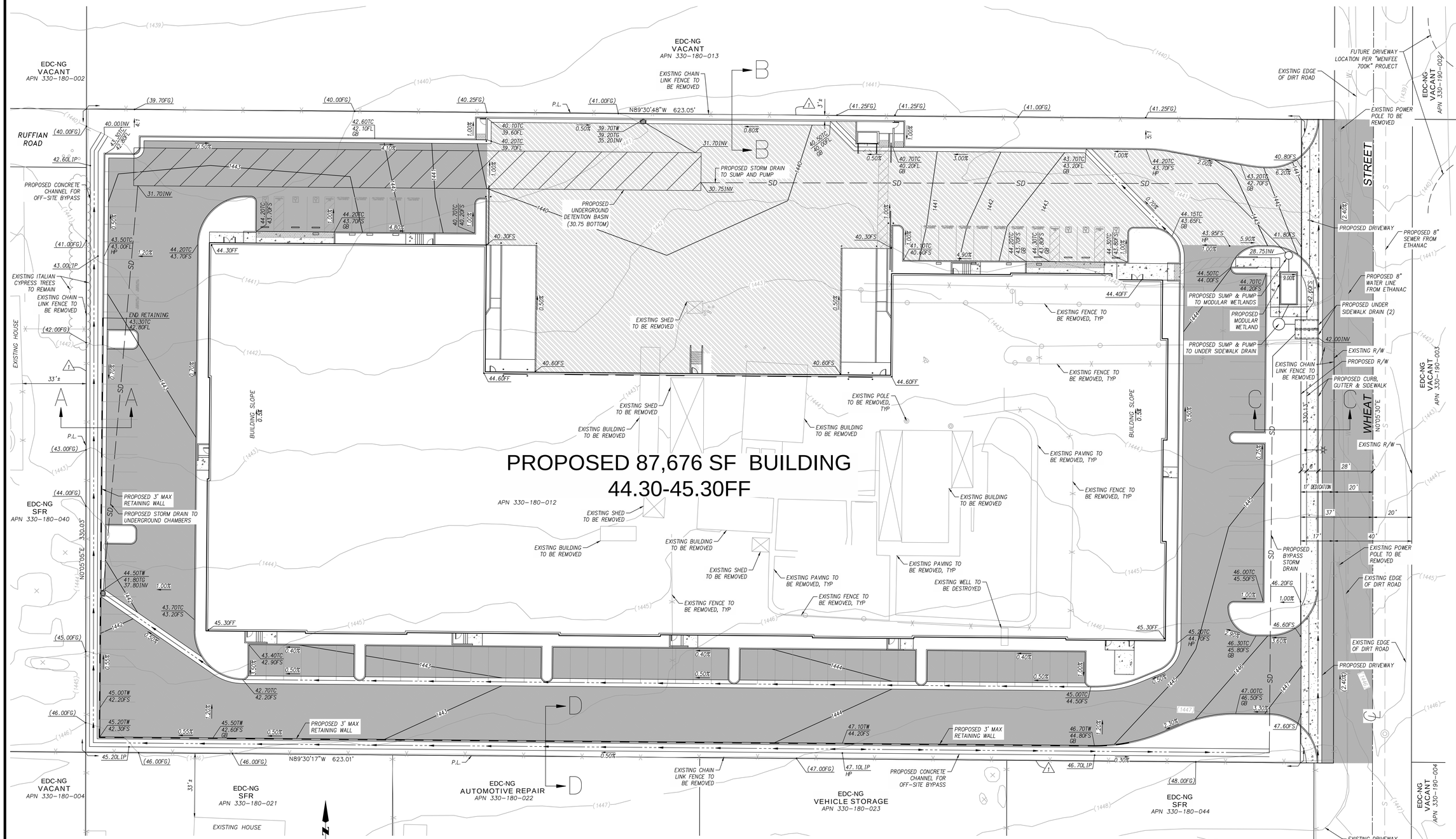
Drawing Name: G:\1494-0012 CORE Wheat Street Menifee #2\WQS\CAD\1494-0012 WQMP.dwg
Last Opened: Mar 24, 2022 - 2:30pm by Ephrata



RECIEVING WATERS MAP

Appendix 2: Construction Plans

Grading and Drainage Plans



LEGAL DESCRIPTION

LOT 789 OF ROMOLA FARMS NO. 9, IN THE COUNTY OF RIVERSIDE, STATE OF CALIFORNIA, AS SHOWN BY MAP ON FILE IN BOOK 14, PAGE 91 OF MAPS, IN THE OFFICE OF THE COUNTY RECORDER OF RIVERSIDE COUNTY, CALIFORNIA

EASEMENTS

1 AN EASEMENT FOR POLE LINES AND INCIDENTAL PURPOSES, IN FAVOR OF SOUTHERN SIERRAS POWER COMPANY, RECORDED MAY 11, 1928 IN BOOK 765 OF DEEDS, PAGE 185.

SOURCE OF SURVEY

JOB NO. 2180-18
DATED JANUARY 2022
AS CONDUCTED BY
TMR ASSOCIATES
155 W. HOSPITALITY LN. STE. 122
SAN BERNARDINO, CA 92408
PHONE: (909) 890-3730

GRAPHIC SCALE
20 0 10 20 40
1" = 20'

LEGEND

1330	PROPOSED CONTOUR
(1330)	EXISTING CONTOUR
2.30%	PROPOSED GRADE
℄	CENTERLINE
HP	HIGH POINT
R/W	RIGHT OF WAY
P.L.	PROPERTY LINE
GB	GRADE BREAK
TC	TOP OF CURB
TG	TOP OF GRATE
FS	FINISH SURFACE
FL	FLOWLINE
XX.XX	PROPOSED ELEVATION
(XX.XX)	EXISTING ELEVATION
SFR	SINGLE FAMILY RESIDENCE
EDC-NG	ECONOMIC DEVELOPMENT CORRIDOR–NORTHERN GATEWAY
	PROPOSED SIDEWALK
	PROPOSED AC PAVING
	PROPOSED PCC PAVING
	PROPOSED STREET LIGHT

GENERAL NOTES

1. ASSESSOR'S PARCEL NUMBER: 330-180-012
2. EXISTING GROSS AREA: 211,256 SF = 4.85 AC
3. EXISTING NET USABLE AREA: 211,256 SF = 4.85 AC
4. PROPOSED GROSS AREA: 205,6644 SF = 4.72 AC
5. PROPOSED NET USABLE AREA: 205,644 SF = 4.72 AC
6. PROPOSED STREET DEDICATION AREA: 5,612 SF = 0.13 AC
7. EXISTING ZONE DESIGNATION: ECONOMIC DEVELOPMENT CORRIDOR-NORTHERN GATEWAY
8. PROPOSED ZONE DESIGNATION: ECONOMIC DEVELOPMENT CORRIDOR-NORTHERN GATEWAY
9. EXISTING LAND USE: SINGLE FAMILY RESIDENCE/AGRICULTURE
10. PROPOSED LAND USE: WAREHOUSE / OFFICE
11. PROJECT SITE IS LOCATED WITHIN ZONE "X" - 'AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN' AS PER FLOOD INSURANCE RATE MAP COMMUNITY PANEL NUMBER 06065C2055H, DATED AUGUST 18, 2014.*
12. THE LAND IS NOT SUBJECT TO OVERFLOW, INUNDATION, OR FLOOD HAZARD.
13. THE SITE HAS VERY LOW POTENTIAL FOR LIQUEFACTION.
14. SITE IS LOCATED WITHIN AN ADDITIONAL SURVEY AREA FOR BURROWING OWLS.
15. SITE IS NOT LOCATED IN A COUNTY SERVICE AREA OR COMMUNITY FACILITIES DISTRICT.

UTILITY NOTIFICATION

FRONTIER COMMUNICATIONS
9 S. 4TH STREET
REDLANDS, CA 92373
PHONE: (909) 748-6676

SOUTHERN CALIFORNIA GAS COMPANY
1981 WEST LUGONIA AVENUE
REDLANDS, CA 92373
PHONE: (909) 335-7550

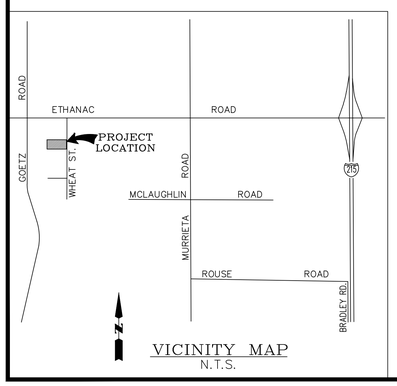
SOUTHERN CALIFORNIA EDISON
26100 MENIFEE ROAD
ROMOLAND, CA 92585
PHONE: (951) 928-8334

EASTERN MUNICIPAL WATER DISTRICT
2270 TRUMBLE ROAD
PERRIS, CA 92572
PHONE: (951) 928-3777

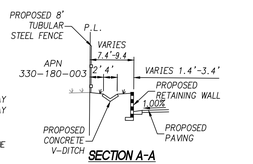
ESTIMATED RAW EARTHWORK QUANTITIES

BASE SURFACE:	1494-0012 EG
COMPARISON SURFACE:	1494-0012 PR
CUT VOLUME (UNADJUSTED)	5,700 CU. YD.
FILL VOLUME (UNADJUSTED)	5,700 CU. YD.

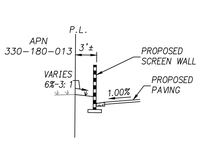
NOTE: SITE IS EXPECTED TO BALANCE AFTER LOSSES.



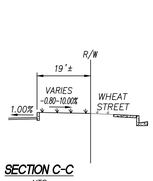
VICINITY MAP
N.T.S.



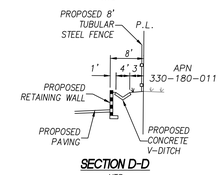
SECTION A-A
NTS



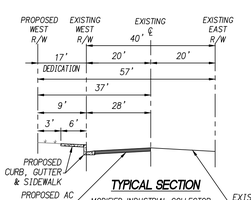
SECTION B-B
NTS



SECTION C-C
NTS



SECTION D-D
NTS



TYPICAL SECTION
MODIFIED INDUSTRIAL COLLECTOR
WHEAT STREET - FACING NORTH
NTS

CONCEPTUAL GRADING PLAN

WHEAT STREET INDUSTRIAL BUILDING

CDREP II LLC.
APN 330-180-012
CITY OF MENIFEE

CASC Engineering and Consulting
1470 EAST COOLEY DRIVE, COLTON, CA 92324
PH. (909) 783-0101 FAX (909) 783-0108
www.cascinc.com

SEALS:

REGISTERED PROFESSIONAL ENGINEER PATRICK C. FLANAGAN JR. NO. C 086046 CIVIL STATE OF CALIFORNIA

PREPARED FOR/APPLICANT:
CDREP II LLC
ATTN: MARK BUCHL
523 MAIN STREET
EL SEGUNDO, CA 90245
(310) 429-3302

PROPERTY OWNER:
RITA MAE HALE
C/O: CDREP II LLC
523 MAIN STREET
EL SEGUNDO, CA 90245
(310) 429-3302
mbuchl@kbehs.com

BENCHMARK
600-31-68

BASIS OF BEARING
CENTERLINE OF WHEAT ROAD
BEING N00°05'30"W PER PMB 109/43

CGP

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

1494-0012 - WHEAT ST.

MENIFEE, CA

MC-7200 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-7200.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 450 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-7200 CHAMBER SYSTEM

1. STORMTECH MC-7200 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-7200 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-7200 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

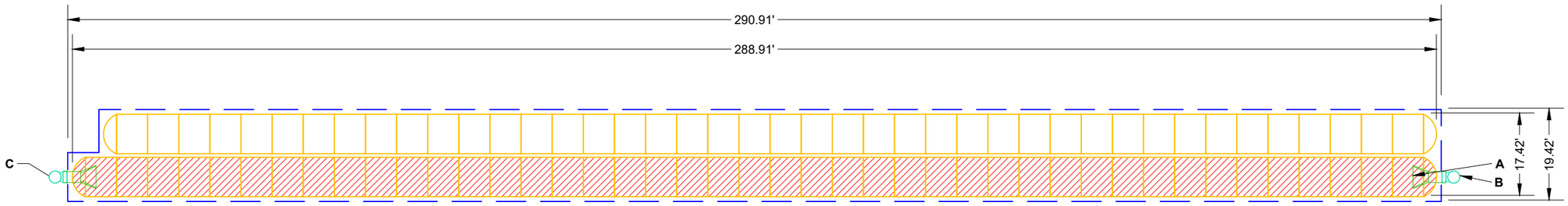
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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PROPOSED LAYOUT		PROPOSED ELEVATIONS	
85	STORMTECH MC-7200 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	43.50
4	STORMTECH MC-7200 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	39.00
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	38.50
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	38.50
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	38.50
24155	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	37.50
		TOP OF MC-7200 CHAMBER:	36.50
		24" ISOLATOR ROW PLUS INVERT:	31.69
		24" ISOLATOR ROW PLUS INVERT:	31.69
5589	SYSTEM AREA (SF)	BOTTOM OF MC-7200 CHAMBER:	31.50
620.7	SYSTEM PERIMETER (ft)	BOTTOM OF STONE:	30.75

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
FLAMP	A	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MC720024RAMP (TYP 2 PLACES)		
NYLOPLAST (INLET W/ ISO PLUS ROW)	B	30" DIAMETER (24.00" SUMP MIN)		
NYLOPLAST (INLET W/ ISO PLUS ROW)	C	30" DIAMETER (24.00" SUMP MIN)		



ISOLATOR ROW PLUS (SEE DETAIL)

NO WOVEN GEOTEXTILE

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

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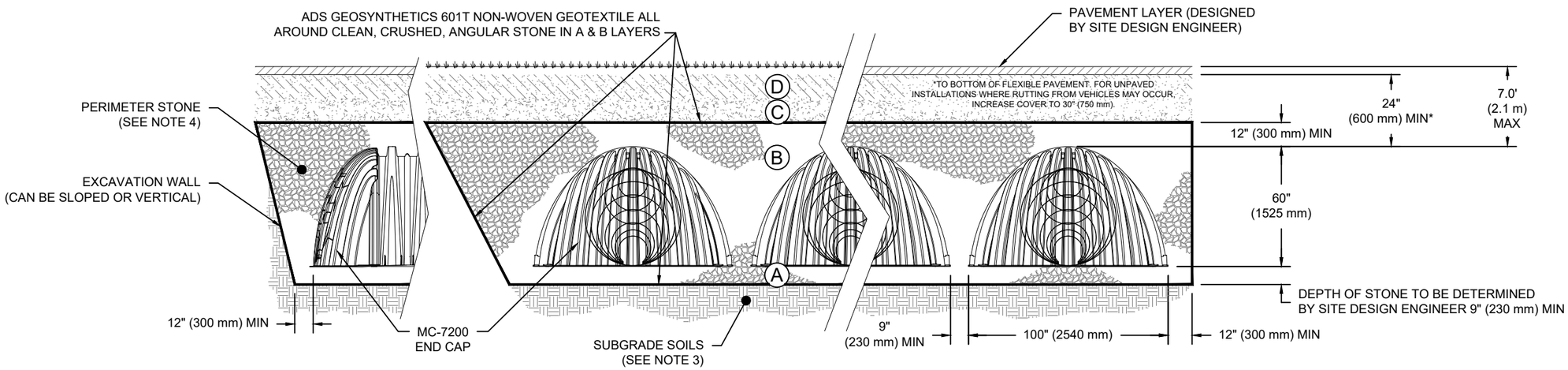
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0 25' 50'

ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 450 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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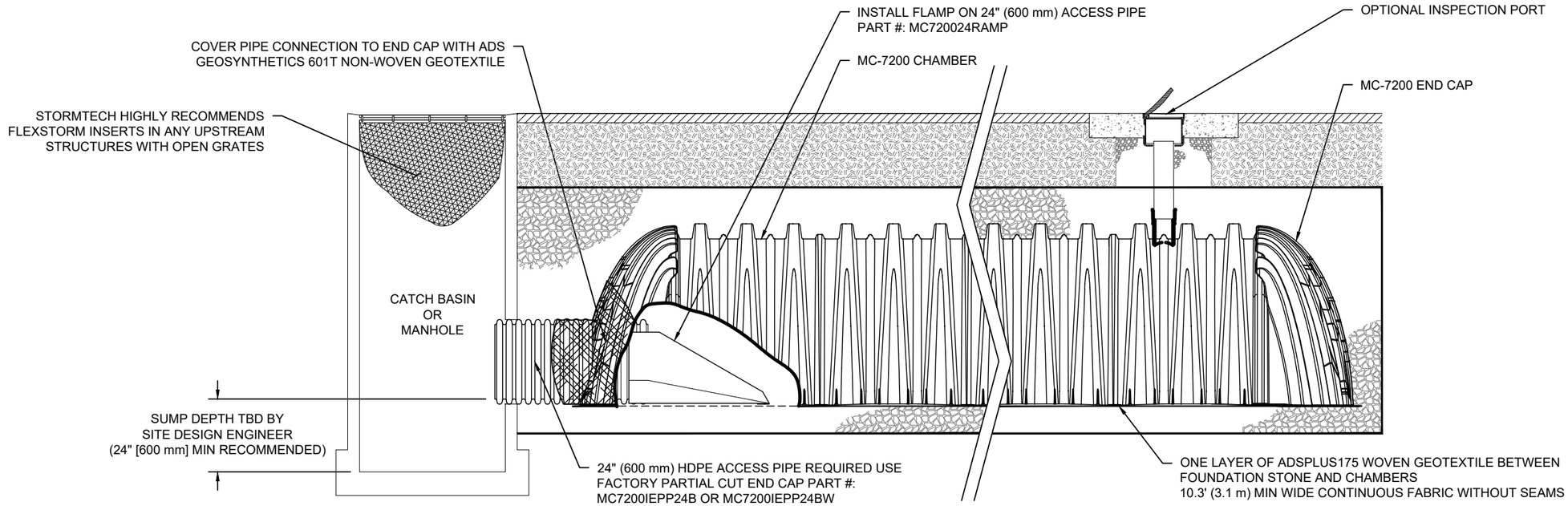
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SHEET
3 OF 6

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MC-7200 ISOLATOR ROW PLUS DETAIL
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INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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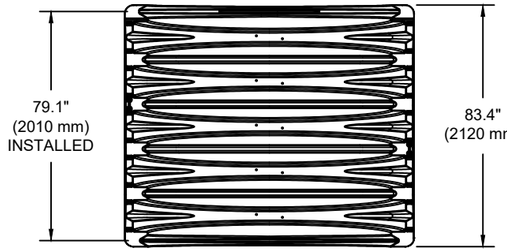
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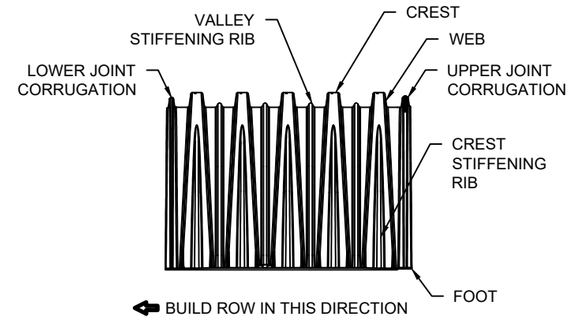
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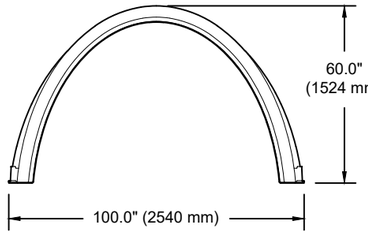
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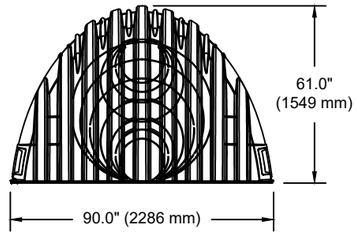
MC-7200 TECHNICAL SPECIFICATION

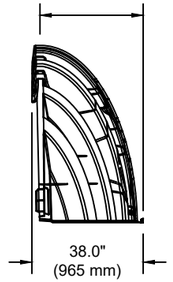
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NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

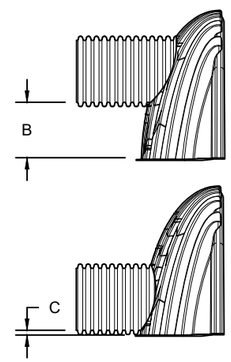
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B		---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B		---	1.70" (43 mm)
MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

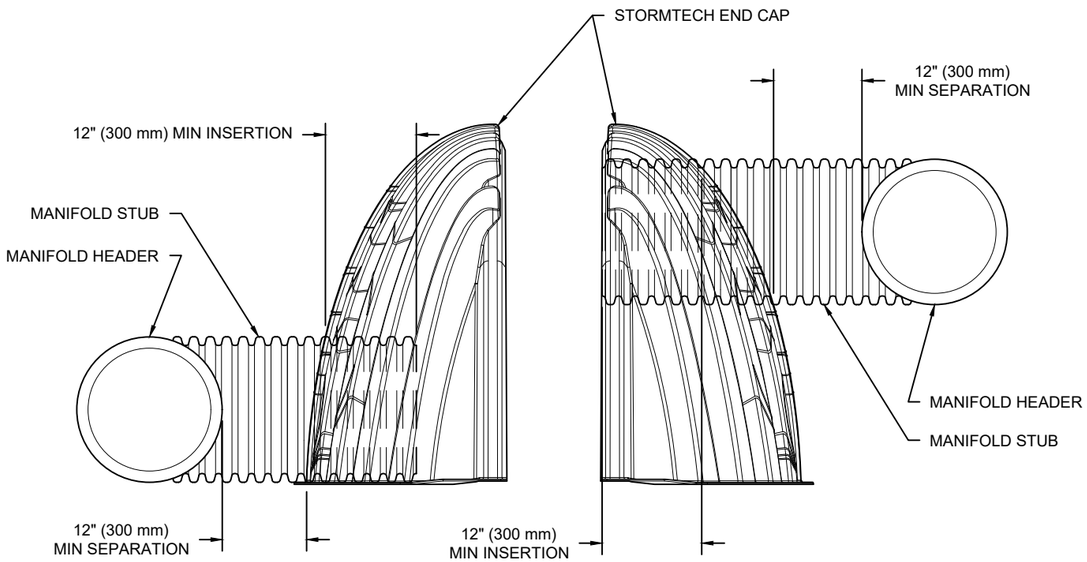
NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-SERIES END CAP INSERTION DETAIL

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NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

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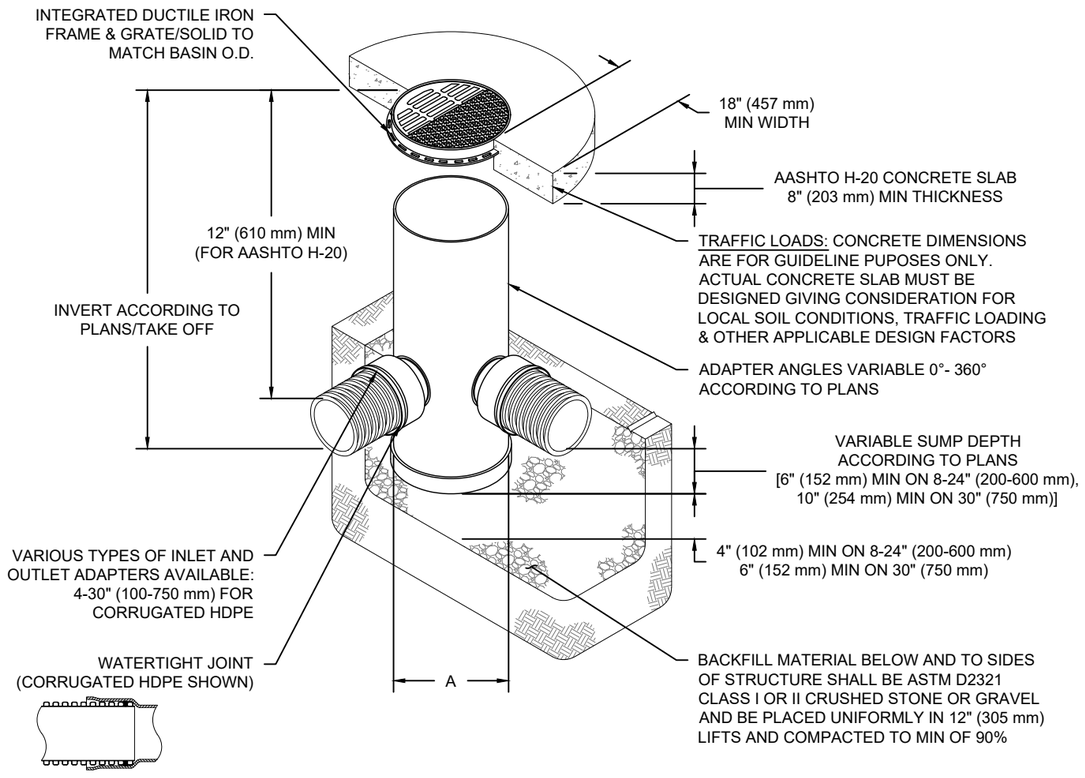
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NYLOPLAST DRAIN BASIN

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NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

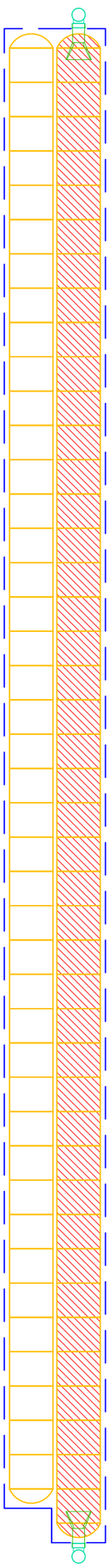
A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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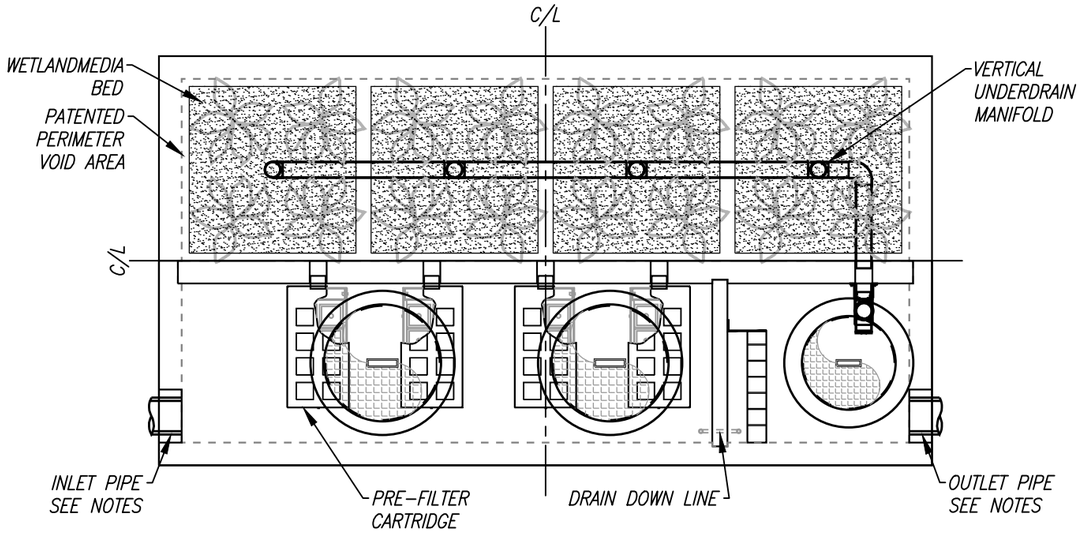
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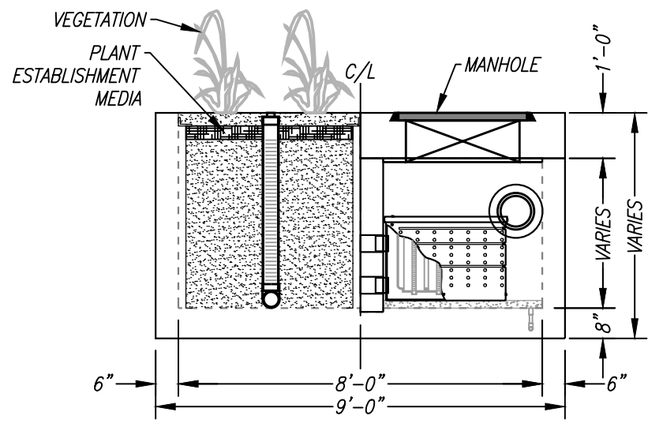


SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
20151		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	2EA ø30"	OPEN PLANTER	ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



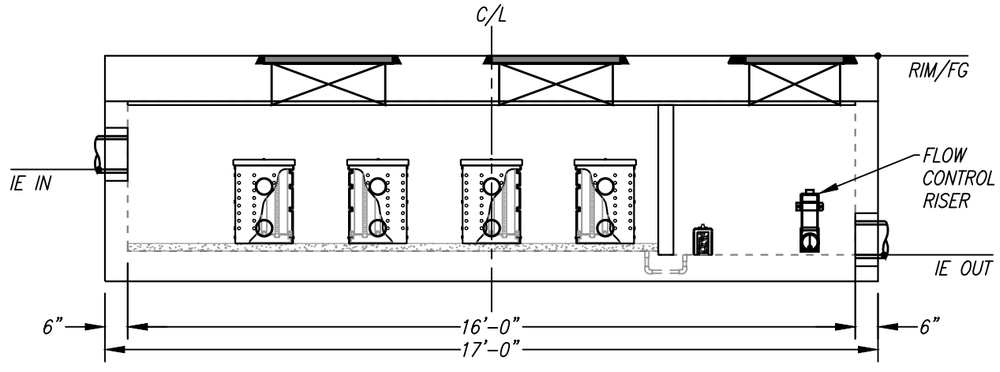
LEFT END VIEW

INSTALLATION NOTES

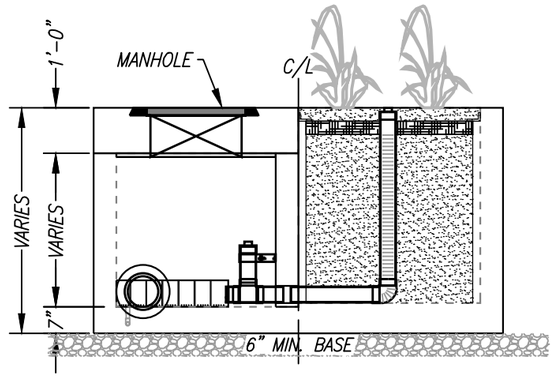
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	20151
DRAINDOWN DURATION (HOURS)	48
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	26.17
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF)	0.26

MODULAR WETLANDS

THIS PRODUCT MAY BE PROTECTED BY ONE OR MORE OF THE FOLLOWING US PATENTS: 7,425,262; 7,470,362; 7,674,378; 8,303,816; RELATED FOREIGN PATENTS OR OTHER PATENTS PENDING

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MWS-L-8-16-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

5/24/19 10:LEF

Appendix 3: Soils Information

Geotechnical Study and Other Infiltration Testing Data

LOR GEOTECHNICAL GROUP, INC.
Soil Engineering ▲ Geology ▲ Environmental

PRELIMINARY GEOTECHNICAL AND INFILTRATION FEASIBILITY INVESTIGATION PROPOSED INDUSTRIAL DEVELOPMENT APN 330-180-012 26201 WHEAT STREET MENIFEE, CALIFORNIA

PROJECT NO. 23796.1
FEBRUARY 14, 2022

Prepared For:

Compass Danbe Real Estate Partners II, LLC
523 Main Street
El Segundo, California 90245

Attention: Mr. Mark Bachli

February 14, 2022

Compass Danbe Real Estate Partners II, LLC
8151 Auto Drive
Riverside, California 92504

Project No. 23796.1

Attention: Mr. Mark Bachli

Subject: Preliminary Geotechnical and Infiltration Feasibility Investigation, Proposed Industrial Development, APN 330-180-012, 26201 Wheat Street, Menifee, California.

LOR Geotechnical Group, Inc., is pleased to present this report of our geotechnical investigation for the subject project. In summary, it is our opinion that the proposed development is feasible from a geotechnical perspective, provided the recommendations presented in the attached report are incorporated into design and construction. However, the contents of this summary should not be solely relied upon.

To provide adequate support for the proposed structures, we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. Any undocumented fill material and any loose older alluvial materials should be removed from structural areas and areas to receive engineered compacted fills. The data developed during this investigation indicates that removals on the order of approximately 5 feet will be required from currently planned development areas. The given removal depths are preliminary and the actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Low expansion potential, poor R-value quality, and negligible soluble sulfate content generally characterize the onsite materials tested. Near completion and/or at the completion of site grading, additional foundation and subgrade soils should be tested, as necessary, to verify their expansion potential, soluble sulfate content, and R-value quality.

Non-conducive infiltration rates were obtained for the soils tested.

LOR Geotechnical Group, Inc.

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INTRODUCTION

During January and February of 2022, a Preliminary Geotechnical and Infiltration Feasibility Investigation was performed by LOR Geotechnical Group, Inc., for the proposed industrial development of Assessor's Parcel Number (APN) 330-180-012, 26201 Wheat Street, Menifee, California. The purpose of this investigation was to provide a technical evaluation of the geologic setting of the site and to provide geotechnical design recommendations for the proposed development. The scope of our services included:

- Review of available geotechnical literature, reports, maps, and agency information pertinent to the study area;
- Interpretation of aerial photographs of the site and surrounding regions dated 1966 through 2021;
- Geologic field reconnaissance mapping to verify the aerial distribution of earth units and significance of surficial features as compiled from documents, literature, and reports reviewed;
- A subsurface field investigation to determine the physical soil conditions pertinent to the proposed development;
- Percolation testing via the borehole test method;
- Laboratory testing of selected soil samples obtained during the field investigation;
- Development of geotechnical recommendations for site grading and foundation design; and
- Preparation of this report summarizing our findings, and providing conclusions and recommendations for site development.

The approximate location of the site is shown on the attached Index Map, Enclosure A-1, within Appendix A.

PROJECT CONSIDERATIONS

To orient our investigation at the site, an Alta Survey prepared by J.D. Cole and Associates, Inc., undated, was furnished for our use. The existing site conditions and proposed building configurations, associated driveways, parking, and landscape areas were indicated on this plan. This plan was utilized as a base map for our field investigation

and is presented as Enclosure A-2, within Appendix A. As noted on the Site Plan, development of the site will include an industrial type structure comprising 82,272± square foot building with ten to eleven (10 to 11) dock doors, with the remainder of the property to be used for driveways, parking, and landscape areas. The building is anticipated to be of concrete, masonry, or similar type construction and light to moderate foundation loads are anticipated with these structures.

Infiltration is proposed via underground chamber type systems. Depths and locations were provided by CASC Engineering and Consulting.

Grading plans have not yet been developed. However, based on the current topography of the site and adjacent areas, minor cuts and fills are anticipated to create level surfaces for the proposed development.

AERIAL PHOTO ANALYSIS

The aerial photographs reviewed consisted of vertical aerial photograph images of varying scales. We reviewed imagery available from Google Earth Pro (2022) computer software and from online Historic Aerials (2022).

To summarize briefly, the site was vacant land utilized for dry land farming since 1966, the earliest photograph available, until the 1997 photograph. The 2002 photograph shows the site developed with a residence and outbuildings, very similar to that seen today. No evidence for the presence of faults traversing the site area or mass movement features was noted during our review of the photographs covering the site and nearby vicinity.

EXISTING SITE CONDITIONS

The approximate 5-acre site is located within the northwestern portion of the city of Menifee, California. It consists of a residence and three outbuildings within the center and the remainder vacant land. A water well is present near the residence. Details regarding the depth of the well and the depth to water are not known. Several large trees are present near the structures and along the western site boundary. The property is situated along the west side of Wheat Street, an unimproved roadway. Topographically, the site is planar with a gentle fall to the north-northwest.

Large lot residential properties lie south and east of the site. North and east of the site, the properties are vacant.

SUBSURFACE FIELD INVESTIGATION

Our subsurface field exploration program was conducted on January 20, 2022. The work consisted of advancing a total of 5 exploratory borings using a truck-mounted drill rig equipped with 8-inch diameter hollow stem augers. The approximate locations of our exploratory borings are presented on Enclosure A-2, within Appendix A.

The subsurface conditions encountered in the exploratory borings were logged by a geologist from this firm. The borings were drilled to maximum depths of 15.5 to 41 feet below the existing ground surface. Relatively undisturbed and bulk samples were obtained at a maximum depth interval of 5 feet, and returned to our geotechnical laboratory in sealed containers for further testing and evaluation.

A detailed description of the subsurface field exploration program and the boring logs is presented in Appendix B.

LABORATORY TESTING PROGRAM

Selected soil samples obtained during the field investigation were subjected to geotechnical laboratory testing to evaluate their physical and engineering properties. Laboratory testing included in-place moisture content and dry density, laboratory compaction characteristics, direct shear, expansion index, sieve analysis, sand equivalent, R-value, expansion index, consolidation, and soluble sulfate content. A detailed description of the geotechnical laboratory testing program and the test results are presented in Appendix C.

GEOLOGIC CONDITIONS

Regional Geologic Setting

As shown on Enclosure A-1, within Appendix A, the site is located within the United States Geological Survey Romoland 7.5 minute quadrangle topographic map. This region lies along the north-central portion of the Perris block of the northern Peninsular Ranges geologic province of southern California. While the Perris block is considered to be a relatively stable structural block, it is bounded by active faults. These include the Elsinore

fault zone on the west, the San Jacinto fault zone on the east, and the Cucamonga fault zone on the north. The Perris block is underlain by rocks of the Peninsular Ranges batholith, a very large mass of crystalline igneous rocks of Cretaceous age and with no known floor, and by prebatholithic metasedimentary and metavolcanic rocks of older ages.

The Perris block has a series of erosional surfaces, marked by low topographic relief and capped with unconsolidated alluvial sediments stripped from the surrounding highlands. This area was mapped by the California Division of Mines and Geology as being underlain by deposits of old alluvial fan deposits (Morton, 2003).

The interior of the Perris Plain is considered to be relatively stable with few known active faults. However, this plain is bounded by active faults. These include the Elsinore fault zone on the west, the San Jacinto fault zone on the northeast, the San Andreas fault zone on the north, and the Agua-Tibia fault zone on the south. As the subject site is located near the western margin of the Perris Plain, the Elsinore fault is the closest known active fault in relation to the site. At its closest approach, the Elsinore fault is located approximately 13.0 kilometers (8.1 miles) southwest from the site. A complete listing of the distances to known active faults in relation to the various planning areas is given in the Faulting section of this report.

The site is shown within the regional geologic setting as mapped by the U.S.G.S. on the enclosed Regional Geologic Map, Enclosure A-3, within Appendix A.

Site Geologic Conditions

Fill/Topsoil: Fill/topsoil materials were encountered within our exploratory borings to depths of approximately 1 foot. The fill/topsoil materials are believed to be associated with current and past weed abatement (discing) practices at the site. As encountered, the fill/topsoil materials were comprised of silty sand which were predominantly brown to red-brown, dry, and in a loose state. Locally, deeper fills are anticipated to be present and primarily associated with the existing improvements.

Older Alluvium: Older alluvial materials were encountered underlying the fill materials described above within all of our exploratory borings. The older alluvial soils encountered were a maximum of approximately 9 feet in thickness and rest upon bedrock materials. These units were noted to mainly consist of sandy silt, silty sand, and minor units of lean clay with sand. The older alluvial materials were in a relatively medium /medium dense to very stiff/very dense state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing. Consolidation testing of a relatively low density, low blow

count sample indicates normal consolidation characteristics. Expansion index testing indicates that these materials will have a very low to nearly low expansion potential when used as compacted fill.

Bedrock: Igneous bedrock materials were encountered within all of our exploratory borings at depths of approximately 6.5 to 10 feet. The igneous bedrock was typically coarse grained, highly to moderately weathered upon first encounter becoming less weathered with depth, dry to damp, and in a hard to very hard state based on our equivalent Standard Penetration Test (SPT) data and in-place density testing.

A detailed description of the subsurface soil conditions as encountered within our exploratory borings, is presented on the Boring Logs within Appendix B.

Groundwater Hydrology

Groundwater was not encountered within any of our exploratory borings as advanced to a maximum depth of approximately 41 feet below the existing ground surface nor was any groundwater seepage observed during our site reconnaissance.

In order to estimate the approximate depth to groundwater in the site area, a search was conducted for local groundwater (well) level measurements within the Cooperative Well Measuring Program, Spring 2021 (Watermaster Support Services et al., 2021). This database contains depth to groundwater measurements dating back to 1993. We also conducted a search of the water well database information provided in the California Department of Water Resources (CDWR) Water Library Data website (CDWR, 2021).

The only database with nearby well records was the CDWR database. One well, State Well No. 05S03W17A001S, located approximately 1 kilometer (0.62 miles) to the northeast was identified. Data for this well was limited to one reading in 1995. A measuring point elevation of 1,424± feet above mean sea level was reported. The depth provided was 22 feet (elevation of 1,402± feet above mean sea level).

As noted on Enclosure A-2, the lowest elevation of the site is 1,440 feet above mean sea level. Based on the information above, groundwater in the region appears to be at depths on the order of 40 feet below the ground surface. Groundwater may seep into the bedrock beneath the site region along fractures and joints within the bedrock, the presence of hard bedrock beneath the site generally precludes the development of groundwater conditions or a groundwater table in these areas. Any groundwater that might be encountered during

site development would likely be the result of infiltration of surface waters/irrigation waters traveling downward into the bedrock along these joints and fractures.

Mass Movement

The site lies on a relatively flat surface. The occurrence of mass movement failures such as landslides, rockfalls, or debris flows within such areas is generally not considered common, and no evidence of mass movement was observed on the site.

Faulting

No active or potentially active faults are known to exist at the subject site. In addition, the subject site does not lie within a current State of California Earthquake Fault Zone (Hart and Bryant, 2003) nor does the site lie within a County of Riverside fault zone (CRTLMA, 2021). No evidence of faulting projecting into or crossing the site was noted during our aerial photograph review or our review of published geologic maps.

As previously mentioned, the closest known active earthquake fault with a documented location is the Elsinore fault located approximately 13.0 kilometers (8.1 miles) to the southwest. In addition, other relatively close active faults include the San Jacinto fault located approximately 18.7 kilometers (11.6 miles) to the northeast, and the San Andreas fault located approximately 40.6 kilometers (25.2 miles) to the northeast.

The Elsinore fault zone is one of the largest in southern California. At its northern end it splays into two segments and at its southern end it is cut by the Yuba Wells fault. The primary sense of slip along the Elsinore fault is right lateral strike-slip. It is believed that the Elsinore fault zone is capable of producing an earthquake magnitude on the order of 6.5 to 7.5.

The San Jacinto fault zone is a sub-parallel branch of the San Andreas fault zone, extending from the northwestern San Bernardino area, southward into the El Centro region. This fault has been active in recent times with several large magnitude events. It is believed that the San Jacinto fault is capable of producing an earthquake magnitude on the order of 6.5 or larger.

The San Andreas fault is considered to be the major tectonic feature of California, separating the Pacific Plate and the North American Plate. While estimates vary, the San Andreas fault is generally thought to have an average slip rate on the order of 24mm/yr and capable of generating large magnitude events on the order of 7.5.

Current standards of practice included a discussion of all potential earthquake sources within a 100 kilometer (62 mile) radius. However, while there are other large earthquake faults within a 100 kilometer (62-mile) radius of the site, none of these are considered as relevant to the site as the faults described above, due to their closer distance and larger anticipated magnitudes.

Historical Seismicity

In order to obtain a general perspective of the historical seismicity of the site and surrounding region a search was conducted for seismic events at and around the area within various radii. This search was conducted utilizing the historical seismic search website of the U.S.G.S. (2021). This website conducts a search of a user selected cataloged seismic events database, within a specified radius and selected magnitudes, and then plots the events onto a map. At the time of our search, the database contained data from January 1, 1932 through February 8, 2022.

In our first search, the general seismicity of the region was analyzed by selecting an epicenter map listing all events of magnitude 4.0 and greater, recorded since 1932, within a 100 kilometer (62 mile) radius of the site, in accordance with guidelines of the California Division of Mines and Geology. This map illustrates the regional seismic history of moderate to large events. As depicted on Enclosure A-4, within Appendix A, the site lies within a relatively active region associated with the San Jacinto fault to the northeast.

In the second search, the micro seismicity of the area lying within a 15 kilometer (9.3 miles) radius of the site was examined by selecting an epicenter map listing events on the order of 1.0 and greater since 1978. In addition, only the “A” events, or most accurate events were selected. Caltech indicates the accuracy of the “A” events to be approximately 1 kilometer. The result of this search is a map that presents the seismic history around the area of the site with much greater detail, not permitted on the larger map. The reason for limiting the time period for the events on the detail map is to enhance the accuracy of the map. Events recorded prior to the mid to late1970's are generally considered to be less accurate due to advancements in technology. As depicted on this map, Enclosure A-5, the Elsinore fault zone to the southwest and the San Jacinto fault zone to the northeast appears to be the source of numerous events.

In summary, the historical seismicity of the site entails numerous small to medium magnitude earthquake events occurring in the region around the subject site. Any future developments at the subject site should anticipate that moderate to large seismic events could occur very near the site.

Secondary Seismic Hazards

Other secondary seismic hazards generally associated with severe ground shaking during an earthquake include liquefaction, seismic-induced settlement, seiches and tsunamis, earthquake induced flooding, landsliding, and rockfalls.

Liquefaction: The site lies within an area mapped by the County of Riverside has having a very low potential for liquefaction (CRTLMA, 2021). The potential for liquefaction generally occurs during strong ground shaking within granular loose sediments where the groundwater is usually less than 50 feet below the ground surface. As found during this investigation, the site is underlain by relatively shallow igneous bedrock in the upper 50 feet, therefore, the possibility of liquefaction at the site is considered nil.

Seiches/Tsunamis: The potential for the site to be affected by a seiche or tsunami (earthquake generated wave) is considered nil due to absence of any large bodies of water near the site.

Flooding (Water Storage Facility Failure): There are no large water storage facilities located on or near the site which could possibly rupture during in earthquake and affect the site by flooding.

Seismically-Induced Landsliding: Due to the low relief of the site and surrounding region, the potential for landslides to occur at the site is considered nil.

Rockfalls: No large, exposed, loose or unrooted boulders are present above the site that could affect the integrity of the site.

Seismically-Induced Settlement: Settlement generally occurs within areas of loose, granular soils with relatively low density. Since the site is underlain by relatively dense/stiff older alluvial materials and hard igneous bedrock, the potential for settlement is considered very low. In addition, the recommended earthwork operations to be conducted during the development of the site should mitigate any near surface loose soil conditions.

SOILS AND SEISMIC DESIGN CRITERIA (California Building Code 2019)

Design requirements for structures can be found within Chapter 16 of the 2019 California Building Code (CBC) based on building type, use, and/or occupancy. The classification of use and occupancy of all proposed structures at the site, shall be the responsibility of the building official.

Site Classification

Chapter 20 of the ASCE 7-16 defines six possible site classes for earth materials that underlie any given site. Bedrock is assigned one of three of these six site classes and these are: A, B, or C. Soil is assigned as C, D, E, or F. Per ASCE 7-16, Site Class A and Site Class B shall be measured on-site or estimated by a geotechnical engineer, engineering geologist or seismologist for competent rock with moderate fracturing and weathering. Site Class A and Site Class B shall not be used if more than 10 feet of soil is between the rock surface and bottom of the spread footing or mat foundation. Site Class C can be used for very dense soil and soft rock with Ñ values greater than 50 blows per foot. Site Class D can be used for stiff soil with Ñ values ranging from 15 to 50 blows per foot. Site Class E is for soft clay soils with Ñ values less than 15 blows per foot. Our current investigation, mapping by others, and our experience in the site region indicates that the materials beneath the site are considered Site Class D stiff soil.

CBC Earthquake Design Summary

Earthquake design criteria have been formulated in accordance with the 2019 CBC and ASCE 7-16 for the site based on the results of our investigation to determine the Site Class and an assumed Risk Category II. However, these values should be reviewed and the final design should be performed by a qualified structural engineer familiar with the region. In addition, the building official should confirm the Risk Category utilized in our design (Risk Category II). Our design values are provided in Appendix D.

PERCOLATION TESTING AND TEST RESULTS

Two borehole percolation tests were conducted in general accordance with the Shallow Percolation Test procedure as outlined in the Design Handbook for Low Impact Development Best Management Practices (CRFCWCD, 2011). The requested locations of our test are illustrated on Enclosure A-2. Test borings were drilled to depths of approximately 8 feet below the existing ground surface as requested, on January 20, 2022.

Subsequent to drilling, a 3-inch diameter, perforated PVC pipe wrapped in filter fabric was placed within each test hole and 3/4-inch gravel was placed between the outside of the pipe and the hole wall. Test holes were pre-soaked the same day as drilling. Testing took place the next day, January 21, 2022, within 26 hours but not before 15 hours, of the pre-soak. The holes were filled with a variable height column of water using water from a 200 gallon water tank. Test periods consisted of allowing the water to drop in 30-minute intervals. After each reading, the hole was refilled. Testing was terminated after a total of 12 readings were recorded.

Infiltration test results are summarized in the following table:

Test No.	Depth*	Clear Water Infiltration Rate** (in/hr)
P-1	8	0.05
P-2	8	0.21

* depth measured below existing ground surface
** Porchet Method determined rate with an effective diameter due to loss in volume of water due to gravel packing.

The results of this testing are presented as Enclosures E-1 and E-2 in Appendix E. The test results indicate variable infiltration characteristics for the materials tested.

CONCLUSIONS

This investigation provides a broad overview of the geotechnical and geologic factors which are expected to influence future site planning and development. On the basis of our field investigation and testing program, it is the opinion of LOR Geotechnical Group, Inc., that the proposed development of the site for the proposed use is feasible from a geotechnical standpoint, provided the recommendations presented in this report are incorporated into design and implemented during grading and construction.

It should be noted that the subsurface conditions encountered in our exploratory borings are indicative of the locations explored and the subsurface conditions may vary. If conditions are encountered during the construction of the project that differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided.

Rippability of Bedrock Units

The rippability of the bedrock units at the subject site was estimated based on the relative ease, or lack of, excavation during our boring exploration. The bedrock units which underlie the site are anticipated to be rippable by conventional earthmoving equipment down to the depths explored. Excavations deeper than this may require specialized methods, such as D8R or larger dozer using a multi or single shank ripper. It is also anticipated that some larger non-rippable rock "floaters" may be encountered. These may require special handling. Excavations in these materials may require specialized methods.

If a more precise estimation of the rippability of the bedrock units is required, a seismic refraction investigation should be conducted at the site. Such a study should involve the measuring of the seismic velocities of the underlying bedrock units, as they increase with depth, then comparing these to estimates of velocities verses ease of excavation charts.

In summary, the most important consideration for the proposed grading should include selecting an experienced, well-qualified contractor. The success to excavating the bedrock materials at the site will require the contractor to have knowledge of the appropriate ripper-equipment selection (i.e., down pressure available at the tip, tractor flywheel horsepower, tractor gross weight, etc.), ripping techniques (i.e., single- or multi-shank teeth, pass spacing, tandem pushing, etc.). It should also be noted that while in some areas where deeper cuts may be possible with standardized earthmoving equipment, specialized methods may increase the speed of the excavations at the site.

Foundation Support

To provide adequate support for the proposed structure we recommend that a compacted fill mat be constructed beneath footings and slabs. The compacted fill mat will provide a dense, high-strength soil layer to uniformly distribute the anticipated foundation loads over the underlying soils. The construction of this compacted fill mat will allow for the removal of the existing fill material which was loose and any current subsurface improvements, such as utilities, foundations, etc., that may be present locally.

Conventional foundation systems utilizing either individual spread footings and/or continuous wall footings will provide adequate support for the anticipated downward and lateral loads when utilized in conjunction with the recommended fill mat.

Soil Expansiveness

Our expansion index testing of a representative sample of the on-site soils indicates a very low to near low expansion potential. For low expansive soils, specialized foundation design and construction procedures to resist expansive soil activity are necessary and provided in the following sections of this report.

Careful evaluation of onsite soils and any import fill for their expansion potential should be conducted during the grading operation.

Sulfate Protection

The results of the soluble sulfate tests conducted on selected subgrade soils expected to be encountered at foundation levels indicate that there is a negligible sulfate exposure to concrete elements in contact with the on site soils per the 2019 CBC. Therefore, no specific recommendations are given for concrete elements to be in contact with the onsite soils.

Infiltration

The results of our field investigation and percolation test data indicates the site soils at the depths tested are not conducive to infiltration. Based on the results of this investigation, infiltration is also not anticipated to occur at other depths due to the amount of silty/clayey fines and dense to very dense nature of the soils and hard to very hard nature of the bedrock.

Geologic Mitigations

No special mitigation methods are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

Seismicity

Seismic ground rupture is generally considered most likely to occur along pre-existing active faults. Since no known faults are known to exist at, or project into the site, the probability of ground surface rupture occurring at the site is considered nil.

Due to the site's close proximity to the faults described above, it is reasonable to expect a relatively strong ground motion seismic event to occur during the lifetime of the proposed development on the site. Large earthquakes could occur on other faults in the general area, but because of their lesser anticipated magnitude and/or greater distance, they are considered less significant than the faults described above from a ground motion standpoint.

The effects of ground shaking anticipated at the subject site should be mitigated by the seismic design requirements and procedures outlined in Chapter 16 of the California Building Code. However, it should be noted that the current building code requires the minimum design to allow a structure to remain standing after a seismic event, in order to allow for safe evacuation. A structure built to code may still sustain damage which might ultimately result in the demolishing of the structure (Larson and Slosson, 1992).

No secondary seismic hazards are anticipated to impact the proposed development.

RECOMMENDATIONS

Geologic Recommendations

No special geologic recommendations are deemed necessary at this time, other than the geotechnical recommendations provided in the following sections.

General Site Grading

It is imperative that no clearing and/or grading operations be performed without the presence of a qualified geotechnical engineer. An onsite, pre-job meeting with the developer, the contractor, the jurisdictional agency, and the geotechnical engineer should occur prior to all grading related operations.

Operations undertaken at the site without the geotechnical engineer present may result in exclusions of affected areas from the final compaction report for the project.

Grading of the subject site should be performed in accordance with the following recommendations as well as applicable portions of the California Building Code, and/or applicable local ordinances.

All areas to be graded should be stripped of significant vegetation and other deleterious materials.

Any undocumented fill encountered during grading should be completely removed, cleaned of significant deleterious materials, and may be reused as compacted fill. It is our recommendation that any existing fills under any proposed flatwork and paved areas be removed and replaced with engineered compacted fill. If this is not done, premature structural distress (settlement) of the flatwork and pavement may occur.

Cavities created by removal of subsurface obstructions should be thoroughly cleaned of loose soil, organic matter and other deleterious materials, shaped to provide access for construction equipment, and backfilled as recommended in the following Engineered Compacted Fill section of this report.

Initial Site Preparation

The existing fill/topsoil material, as well as any loose older alluvial soils and any loose bedrock, if encountered, should be removed from all proposed structural and/or fill areas. The data developed during this investigation indicates that removals on the order of 5 feet deep will be required from proposed development areas in order to encounter competent older alluvium upon which engineered compacted fill can be placed. The given removal depths are preliminary. Deeper fills may be present, primarily in areas of current improvements. Removals should expose older alluvial materials with an in-situ relative compaction of at least 85 percent (ASTM D 1557). The actual depths of the removals should be determined during the grading operation by observation and/or in-place density testing.

Preparation of Fill Areas

Prior to placing fill, the surfaces of all areas to receive fill should be scarified to a minimum depth of 6 inches. The scarified materials should be brought to near optimum moisture content and recompacted to a relative compaction of at least 90 percent (ASTM D 1557).

Engineered Compacted Fill

The onsite soils should provide adequate quality fill material, provided they are free from oversized and/or organic matter and other deleterious materials. Unless approved by the geotechnical engineer, rock or similar irreducible material with a maximum dimension greater than 6 inches should not be buried or placed in fills.

If required, import fill should be inorganic, non-expansive granular soils free from rocks or lumps greater than 6 inches in maximum dimension. Sources for import fill should be approved by the geotechnical engineer prior to their use. Fill should be spread in maximum 8-inch uniform, loose lifts, each lift brought to near optimum moisture content, and compacted to a relative compaction of at least 90 percent in accordance with ASTM D 1557.

Preparation of Foundation Areas

All footings should rest upon at least 24 inches of properly compacted fill material placed over competent older alluvium. In areas where the required fill thickness is not accomplished by the recommended removals or by site rough grading, the footing areas should be further subexcavated to a depth of at least 24 inches below the proposed footing base grade, with the subexcavation extending at least 5 feet beyond the footing lines. The bottom of all excavations should be scarified to a depth of 12 inches, brought to near optimum moisture content, and recompacted to at least 90 percent relative compaction (ASTM D 1557) prior to the placement of compacted fill.

Concrete floor slabs should bear on a minimum of 24 inches of compacted soil. This should be accomplished by the recommendations provided above. The final pad surfaces should be rolled to provide smooth, dense surfaces upon which to place the concrete.

Short-Term Excavations

Following the California Occupational and Safety Health Act (CAL-OSHA) requirements, excavations 5 feet deep and greater should be sloped or shored. All excavations and shoring should conform to CAL-OSHA requirements. Short-term excavations of 5 feet deep and greater shall conform to Title 8 of the California Code of Regulations, Construction Safety Orders, Section 1504 and 1539 through 1547. Based upon the findings from our exploratory borings, it appears that Type C soils are the predominant type of soil on the project and all short-term excavations should be based on this type of soil.

Deviation from the standard short-term slopes are permitted using option 4, Design by a Registered Professional Engineer (Section 1541.1).

Short-term excavation construction and maintenance are the responsibility of the contractor and should be a consideration of his methods of operation and the actual soil conditions encountered.

Slope Construction

Preliminary data indicates that cut and fill slopes should be constructed no steeper than two horizontal to one vertical. Fill slopes should be overfilled during construction and then cut back to expose fully compacted soil. A suitable alternative would be to compact the slopes during construction, then roll the final slopes to provide dense, erosion-resistant surfaces.

Slope Protection

Since the site soil materials are susceptible to erosion by running water, measures should be provided to prevent surface water from flowing over slope faces. Slopes at the project should be planted with a deep rooted ground cover as soon as possible after completion. The use of succulent ground covers such as iceplant or sedum is not recommended. If watering is necessary to sustain plant growth on slopes, then the watering operation should be monitored to assure proper operation of the irrigation system and to prevent over watering.

Soil Expansiveness

The upper materials encountered during this investigation were tested and found to have a very low to near low expansion potential. Therefore, specialized foundation design and construction procedures to specifically resist expansive soil activity are anticipated at this time and are provided within.

Additional evaluation of on-site and any imported soils for their expansion potential should be conducted following completion of the grading operation.

Foundation Design

Due to near low expansive soil conditions, we recommend that all structures be supported on reinforced, stiffened mat foundations resting over 24 inches of engineered compacted fill placed over competent native earth materials.

The design of the structural slab foundation should be performed in conformance to the Wire Reinforcement Institute (WRI) method or the Post-Tensioning Institute (PTI) method. For the application of the WRI method, a minimum effective plasticity index of 15 is recommended for foundation design. The slab thickness should be a minimum of 5 inches

and should have a reinforcement of at least Asfy equal to 3,300 pounds. This could consist of #3 reinforcing bars of 60-grade steel placed at a maximum spacing of 18 inches on center, each way or equivalent. Prior to placing concrete slabs, the upper 12 inches of the subgrade soil should be pre-saturated to 2 to 4 percent over optimum moisture content.

These reinforcement, depth, and spacing recommendations should be considered minimum. The actual requirements for slab-on-grade foundations design and construction should be provided by a structural engineer experienced in these matters.

These conditions should be verified during the site grading by additional evaluation of on-site and any imported soils for their expansion potential and plasticity characteristics.

If slab-on-grade foundations per the PTI method are proposed, the following geotechnical parameters should be used for design:

- Edge Moisture Variation Distance, em:
  - Center Lift Loading Conditions: 9.0 ft
  - Edge Lift Loading Conditions: 8.2 ft
- Differential Swell, ym:
  - Center Lift 3.0 in
  - Edge Lift 6.0 in

- Subgrade Soil Friction Coefficient, μ: 0.30

The above design parameters are based upon the data collected during our site investigation and are in accordance with Design of Post-Tensioned Slabs-on-Ground, third edition, published by the Post-Tensioning Institute (2008).

For the minimum width and depth, spread foundations may be designed using an allowable bearing pressure of 2,000 pounds per square foot (psf). This bearing pressure may be increased by 200 psf for each additional foot of width, and by 500 psf for each additional foot of depth, up to a maximum of 4,000 psf.

The above values are net pressures; therefore, the weight of the foundations and the backfill over the foundations may be neglected when computing dead loads. The values apply to the maximum edge pressure for foundations subjected to eccentric loads or overturning. The recommended pressures apply for the total of dead plus frequently applied live loads, and incorporate a factor of safety of at least 3.0. The allowable bearing pressures may be increased by one-third for temporary wind or seismic loading.

The resultant of the combined vertical and lateral seismic loads should act within the middle one-third of the footing width. The maximum calculated edge pressure under the toe of foundations subjected to eccentric loads or over turning should not exceed the increased allowable pressure. Buildings should be setback from slopes in accordance with the California Building Code.

Resistance to lateral loads will be provided by passive earth pressure and base friction. For footings bearing against compacted fill, passive earth pressure may be considered to be developed at a rate of 280 pounds per square foot per foot of depth. Base friction may be computed at 0.28 times the normal load. Base friction and passive earth pressure may be combined without reduction. These values are for dead load plus live load and may be increased by one-third for wind or seismic loading.

Settlement

Total settlement of individual foundations will vary depending on the width of the foundation and the actual load supported. Maximum settlement of shallow foundations designed and constructed in accordance with the preceding recommendations are estimated to be on the order of 0.5 inch. Differential settlements between adjacent footings should be about one-half of the total settlement. Settlement of all foundations is expected to occur rapidly, primarily as a result of elastic compression of supporting soils as the loads are applied, and should be essentially completed shortly after initial application of the loads.

Building Area Slab-on-Grade

To provide adequate support, concrete floor slabs-on-grade should bear on a minimum of 24 inches of engineered fill compacted soil placed and maintained at 2 to 4 percent above optimum moisture content. The final pad surfaces should be rolled to provide smooth, dense surfaces. Concrete slabs-on-grade should be a minimum of 5 inches in thickness with No. 3 bars spaced 12 inches on center each way.

The actual requirements for slab-on-grade design and construction details should be provided by a structural engineer experienced in these matters. These conditions should be verified during the site grading by additional evaluation of on-site and any imported soils for their expansion potential and plasticity characteristics.

Slabs to receive moisture-sensitive coverings should be provided with a moisture vapor retarder/barrier. We recommend that a vapor retarder/barrier be designed and constructed

according to the American Concrete Institute 302.1R, Concrete Floor and Slab Construction, which addresses moisture vapor retarder/barrier construction. At a minimum, the vapor retarder/barrier should comply with ASTM E1745 and have a nominal thickness of at least 10 mils. The vapor retarder/barrier should be properly sealed, per the manufacturer's recommendations, and protected from punctures and other damage. Per the Portland Cement Association, for slabs with vapor-sensitive coverings, a layer of dry, granular material (sand) should be placed under the vapor retarder/barrier.

For slabs in humidity-controlled areas, a layer of dry, granular material (sand) should be placed above the vapor retarder/barrier.

The slabs should be protected from rapid and excessive moisture loss which could result in slab curling. Careful attention should be given to slab curing procedures, as the site area is subject to large temperature extremes, humidity, and strong winds.

Exterior Flatwork

To provide adequate support, exterior flatwork improvements should rest on a minimum of 12 inches of soil compacted to at least 90 percent (ASTM D 1557).

To resist expansive soil forces, flatwork supported by low expansive soils should be reinforced with a minimum of # 3 rebar at 18 inches each way. Flatwork areas should be pre-saturated to 2 to 4 percent over optimum moisture content to a minimum depth of 12 inches prior to placing concrete.

Flatwork surface should be sloped a minimum of 1 percent away from buildings and slopes, to approved drainage structures.

Wall Pressures

The design of footings for retaining walls should be performed in accordance with the recommendations described earlier under Preparation of Foundation Areas and Foundation Design. For design of retaining wall footings, the resultant of the applied loads should act in the middle one-third of the footing, and the maximum edge pressure should not exceed the basic allowable value without increase.

For design of retaining walls unrestrained against movement at the top, we recommend an active pressure of 51 pounds per square foot (psf) per foot of depth be used.

This assumes level backfill consisting of compacted, non-expansive, soils placed against the structures and within the back cut slope extending upward from the base of the stem at 35 degrees from the vertical or flatter. Non-expansive import soils may be required. Retaining structures subject to uniform surcharge loads within a horizontal distance behind the structures equal to the structural height should be designed to resist additional lateral loads equal to 0.47 times the surcharge load. Any isolated or line loads from adjacent foundations or vehicular loading will impose additional wall loads and should be considered individually.

To avoid over stressing or excessive tilting during placement of backfill behind walls, heavy compaction equipment should not be allowed within the zone delineated by a 45 degree line extending from the base of the wall to the fill surface. The backfill directly behind the walls should be compacted using light equipment such as hand operated vibrating plates and rollers. No material larger than three inches in diameter should be placed in direct contact with the wall.

Wall pressures should be verified prior to construction, when the actual backfill materials and conditions have been determined. Recommended pressures are applicable only to level, non-expansive, properly drained backfill with no additional surcharge loadings. If inclined backfills are proposed, this firm should be contacted to develop appropriate active earth pressure parameters.

Preliminary Pavement Design

Testing and design for preliminary onsite pavement was conducted in accordance with the California Highway Design Manual. Based upon our preliminary sampling and testing, and upon an assumed Traffic Index generally used for similar projects, it appears that the structural sections tabulated below should provide satisfactory pavements for the subject on-site pavement improvements:

AREA	T.I.	DESIGN R-VALUE	PRELIMINARY SECTION
On site vehicular parking with occasional truck traffic (ADTT=10)	6.0	10	0.25' AC / 1.05' AB or 5" JPCP / 6" AB
Light to moderate truck traffic (ADTT=25)	7.0	10	0.30'AC / 1.25'AB or 6" JPCP / 6" AB
AC - Asphalt Concrete AB - Class 2 Aggregate Base JPCP - Jointed Plain Concrete Pavement with MR ≥ 600 psi			

The above structural sections are predicated upon 90 percent relative compaction (ASTM D 1557) of all utility trench backfills and 95 percent relative compaction (ASTM D 1557) of the upper 12 inches of pavement subgrade soils and of any aggregate base utilized. In addition, the aggregate base should meet Caltrans specifications for Class 2 Aggregate Base.

In areas of the pavement which will receive high abrasion loads due to start-ups and stops, or where trucks will move on a tight turning radius, consideration should be given to installing concrete pads. Such pads should be a minimum of 5 inch thick concrete, with a 6 inch thick aggregate base. Concrete pads are also recommended in areas adjacent to trash storage areas where heavier loads will occur due to operation of trucks lifting trash dumpsters.

The recommended concrete pavement sections should have a minimum modulus of rupture (MR) of 600 pounds per square inch (psi). Transverse joints should be sawcut in the pavement at approximately 12 to 15-foot intervals within 4 to 6 hours of concrete placement, or preferably sooner. Sawcut depth should be equal to approximately one quarter of slab thickness. Construction joints should be constructed such that adjacent sections butt directly against each other and are keyed into each other. Parallel pavement sections should also be keyed into each other.

It should be noted that all of the above pavement design was based upon the results of preliminary sampling and testing, and should be verified by additional sampling and testing during construction when the actual subgrade soils are exposed.

Infiltration

The results of our field investigation and percolation test data indicates the site earth materials at the depths and locations tested are not conducive to infiltration. Therefore, water quality storm water systems should not incorporate on-site infiltration when determining storm water treatment capacity.

Construction Monitoring

Post investigative services are an important and necessary continuation of this investigation. Project plans and specifications should be reviewed by the project geotechnical consultant prior to construction to confirm that the intent of the recommendations presented in this report have been incorporated into the design.

Additional R-value, expansion, and soluble sulfate content testing may be needed after/during site rough grading.

During construction, sufficient and timely geotechnical observation and testing should be provided to correlate the findings of this investigation with the actual subsurface conditions exposed during construction. Items requiring observation and testing include, but are not necessarily limited to, the following:

1. Site preparation-stripping and removals.

2. Excavations, including approval of the bottom of excavations prior to the processing and preparation of the bottom areas for fill placement.

3. Scarifying and recompacting prior to fill placement.

4. Placement of engineered compacted fill and backfill, including approval of fill materials and the performance of sufficient density tests to evaluate the degree of compaction being achieved

5. Foundation excavations.

6. Subgrade preparation for pavements and slabs-on-grade. This includes pre-saturation testing of slab-on-grade and flatwork areas to verify moisture content.

LIMITATIONS

This report contains geotechnical conclusions and recommendations developed solely for use by Compass Danbe Real Estate Partners II, LLC and their design consultants for the purposes described earlier. It may not contain sufficient information for other uses or the purposes of other parties. The contents should not be extrapolated to other areas or used for other facilities without consulting LOR Geotechnical Group, Inc.

The recommendations are based on interpretations of the subsurface conditions concluded from information gained from subsurface explorations and a surficial site reconnaissance. The interpretations may differ from actual subsurface conditions, which can vary horizontally and vertically across the site. If conditions are encountered during the construction of the project, which differ significantly from those presented in this report, this firm should be notified immediately so we may assess the impact to the recommendations provided. Due to possible subsurface variations, all aspects of field construction addressed in this report should be observed and tested by the project geotechnical consultant.

If parties other than LOR Geotechnical Group, Inc., provide construction monitoring services, they must be notified that they will be required to assume responsibility for the geotechnical phase of the project being completed by concurring with the recommendations provided in this report or by providing alternative recommendations.

The report was prepared using generally accepted geotechnical engineering practices under the direction of a state licensed geotechnical engineer. No warranty, expressed or implied, is made as to conclusions and professional advice included in this report. Any persons using this report for bidding or construction purposes should perform such independent investigations as deemed necessary to satisfy themselves as to the surface and subsurface conditions to be encountered and the procedures to be used in the performance of work on this project.

TIME LIMITATIONS

The findings of this report are valid as of this date. Changes in the condition of a property can, however, occur with the passage of time, whether they be due to natural processes or the work of man on this or adjacent properties. In addition, changes in the Standards-of-Practice and/or Governmental Codes may occur. Due to such changes, the findings of this report may be invalidated wholly or in part by changes beyond our control. Therefore, this report should not be relied upon after a significant amount of time without a review by LOR Geotechnical Group, Inc., verifying the suitability of the conclusions and recommendations.

CLOSURE

It has been a pleasure to assist you with this project. We look forward to being of further assistance to you as construction begins. Should conditions be encountered during construction that appear to be different than indicated by this report, please contact this office immediately in order that we might evaluate their effect.

Should you have any questions regarding this report, please do not hesitate to contact our office at your convenience.

Respectfully submitted,
LOR Geotechnical Group, Inc.

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REFERENCES

American Society of Civil Engineers, 2016, Minimum Design Load for Buildings and Other Structures, ASCE 7-16.

California Building Standards Commission and International Conference of Building Officials, 2019, California Building Code, 2019 Edition.

California Department of Water Resources, 2022, Online Water Data Library (WDL), https://wdl.water.ca.gov/waterdatalibrary/Map.aspx, accessed February 2022.

County of Riverside, Flood Control and Water Conservation District (CRFCWCD), 2011, Design Handbook for Low Impact Development Best Management Practices, dated September 2011.

County of Riverside, Transportation and Land Management Agency (CRTLMA), 2022, Geographic Information System, http://www3.tlma.co.riverside.ca.us, accessed February 2022.

Google Earth, 2021, Imagery from various years, www.google.com/earth.

Hart, E.W. and W.A. Bryant, 2010, Fault-Rupture Hazard Zones in California, California Dept. of Conservation Division of Mines and Geology Special Publication 42.

Historic Aerials (Nationwide Environmental Title Research, LLC), 2022, Imagery from Various Years, https://www.historicaerials.com/, accessed February 2022.

Larson, R., and Slosson, J., 1992, The Role of Seismic Hazard Evaluation in Engineering Reports, in Engineering Geology Practice in Southern California, AEG Special Publication Number 4, pp 191-194.

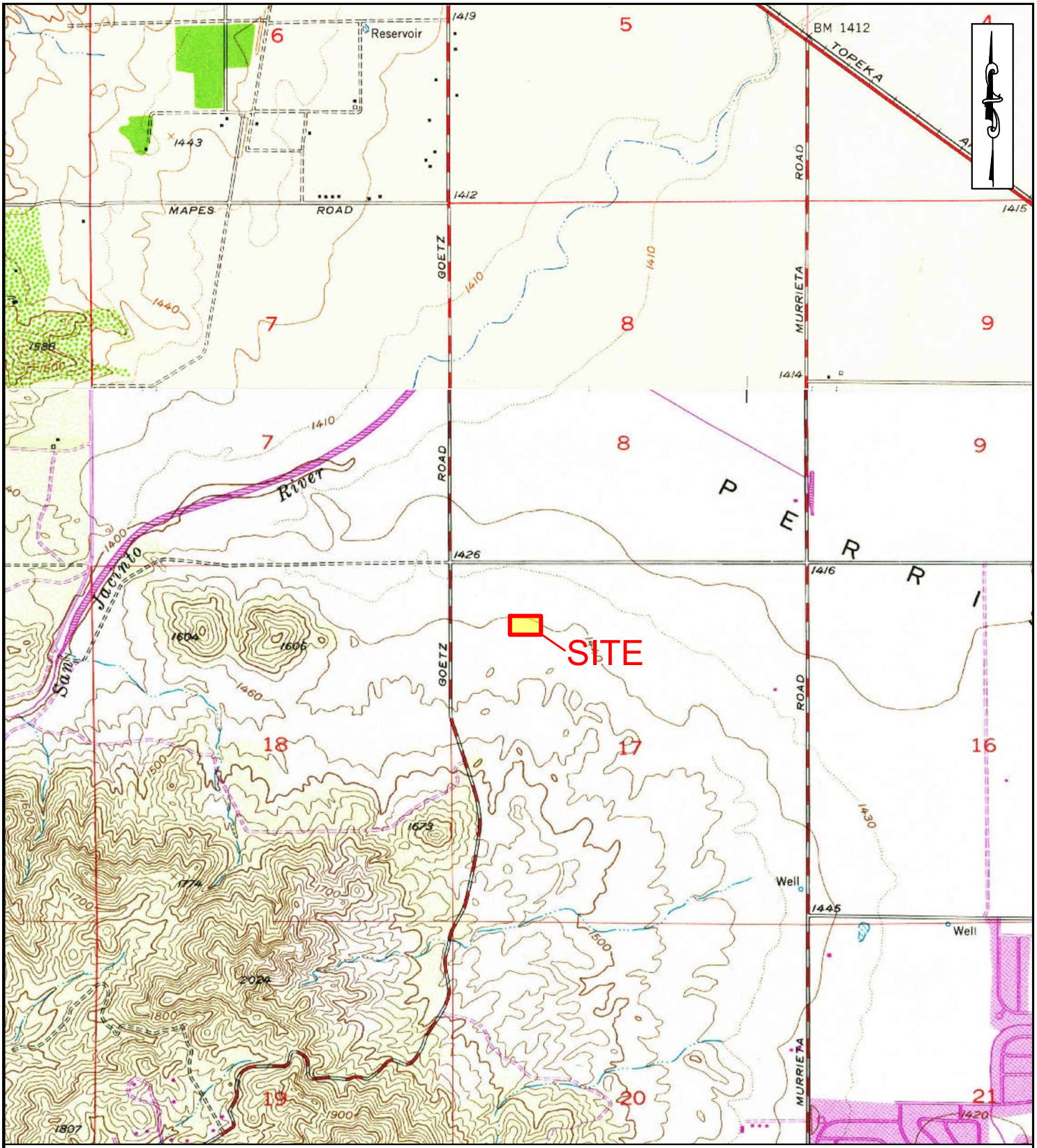
Morton, D.M., 2003, Preliminary Geologic Map of the Romoland 7.5' Quadrangle, Riverside County, California, U.S.G.S. Open File Report 03-102.

USGS, 2021, https://earthquake.usgs.gov/earthquakes/map/, accessed February 2022.

Watermaster Support Services, Western Municipal Water District, and San Bernardino Valley Water Conservation District, 2021, Cooperative Well Measuring Program, Spring 2021, Covering the Upper Santa Ana River Watershed, San Jacinto Watershed, and Santa Margarita Watershed, July 1, 2021.

APPENDIX A

Index Map, Site Plan, Regional Geologic Map, and Historical Seismicity Maps



INDEX MAP

PROJECT:	Proposed Industrial Development, Menifee, California	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-1
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2022
		SCALE:	1" ≈ 2,000'

ALTA SURVEY

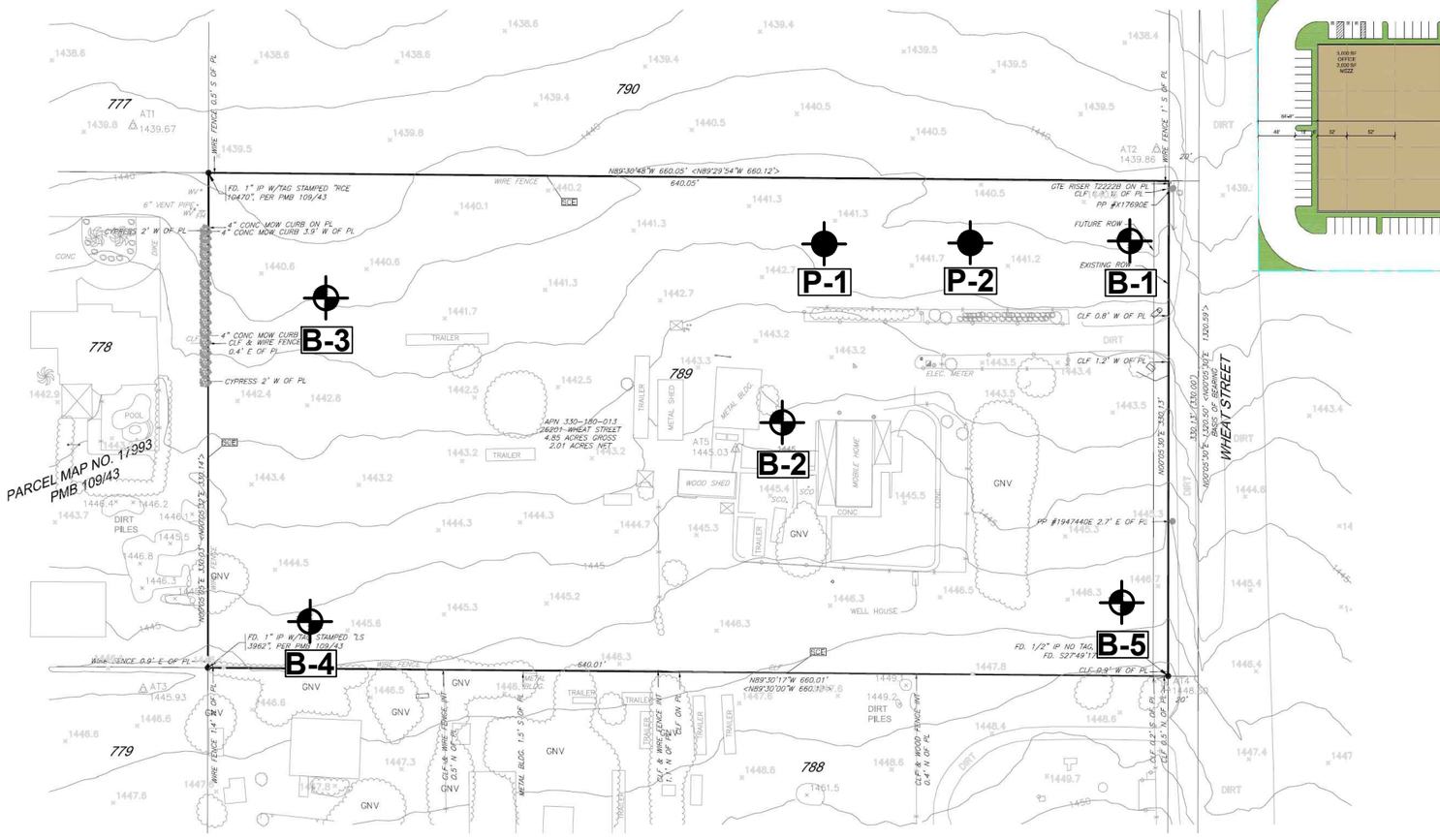
IN THE CITY OF MENIFEE, COUNTY OF RIVERSIDE, STATE OF CALIFORNIA

Legend

(Locations Approximate)

Map Symbols

- **B-5** - Exploratory Boring
- **P-2** - Percolation Test





GRAPHIC SCALE
SCALE 1"=20'
0 10 20 40 60

MONUMENT NOTES:

- ● INDICATES FOUND MONUMENT AS NOTED
  INDICATED FOUND 1" CALDOT MON. PER RS 161/65-97
- ( ) – INDICATES RECORD DATA PER MB 14/91
- [ ] – INDICATED RECORD DATA PER RS 111/77-78
- < > – INDICATES RECORD DATA PER PMB 109/43
- << >> – INDICATES RECORD DATA PER PMB 81/23
- | | – INDICATED RECORD DATA PER PMB 75/32
- SCE – INDICATES SCE EASEMENT ALONG PROPERTY LINE WITH UNDISCLOSED WIDTH PER BK. 765, PAGE 185, O.R.

SURVEYOR'S NOTE:

BASIS OF BEARINGS

THE BASIS OF BEARINGS FOR THE SURVEY IS THE CENTERLINE OF WHEAT ROAD BEING NORTH 00°05'30" WEST PER PMB 109/43.

OFFSET DISTANCES

DISTANCES TO OBJECTS FROM THE PROPERTY LINE ARE SHOWN FROM THE CENTER OF OBJECT WHEN OBJECT IS CIRCULAR IN SHAPE.

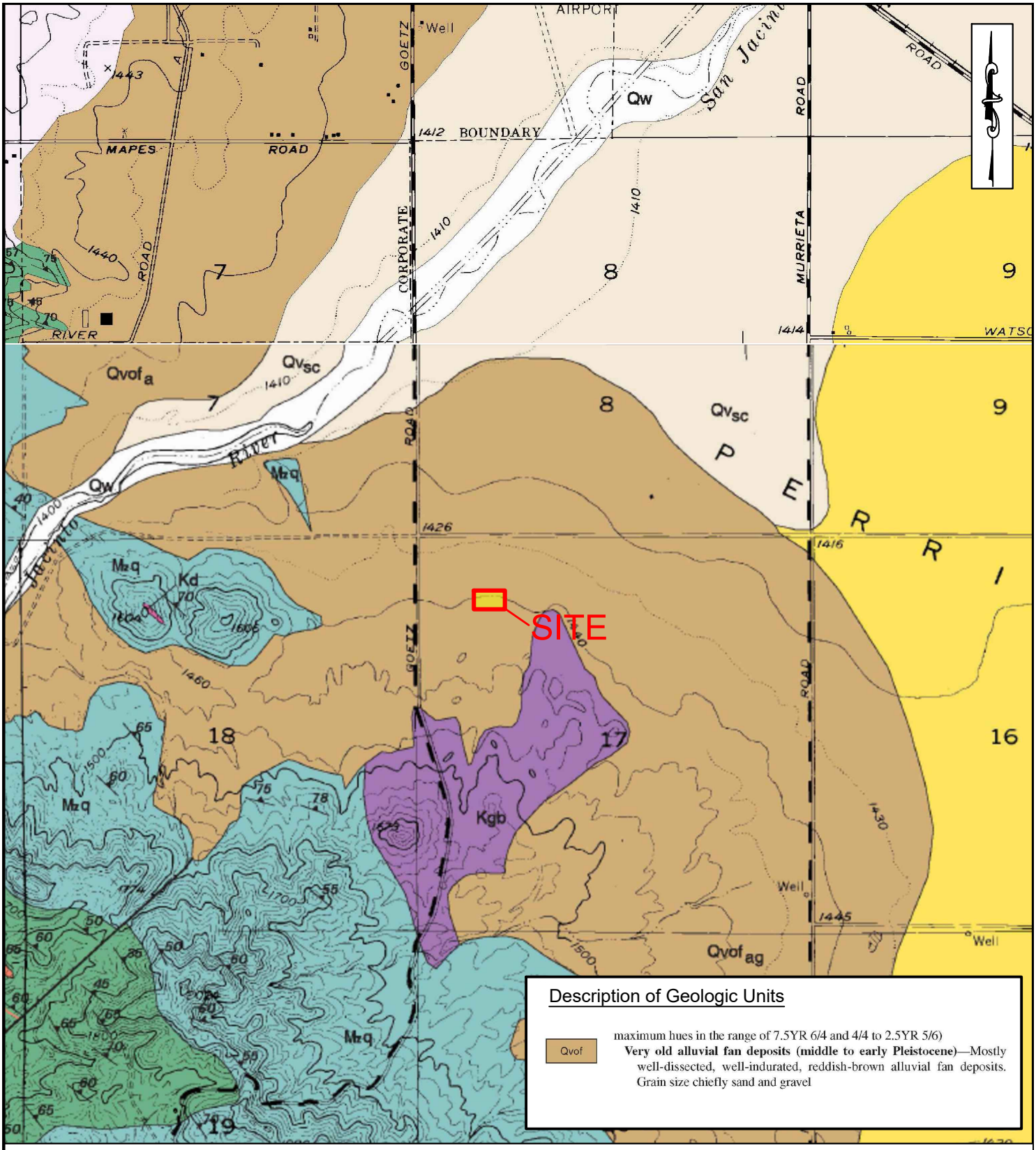
SURVEYOR/MAP PREPARER:

J.D. COLE & ASSOCIATES, INC.
11056 RAMONA STREET
YUCAIPA, CA 92399
(909) 797-2074

SITE PLAN

PROJECT NO.:	23796.1
PROJECT:	Proposed Industrial Development, Menifee, California
ENCLOSURE:	A-2
CLIENT:	Compass Danbe Real Estate Partners II, LLC
DATE:	February 2022
SCALE:	1" ≈ 50'

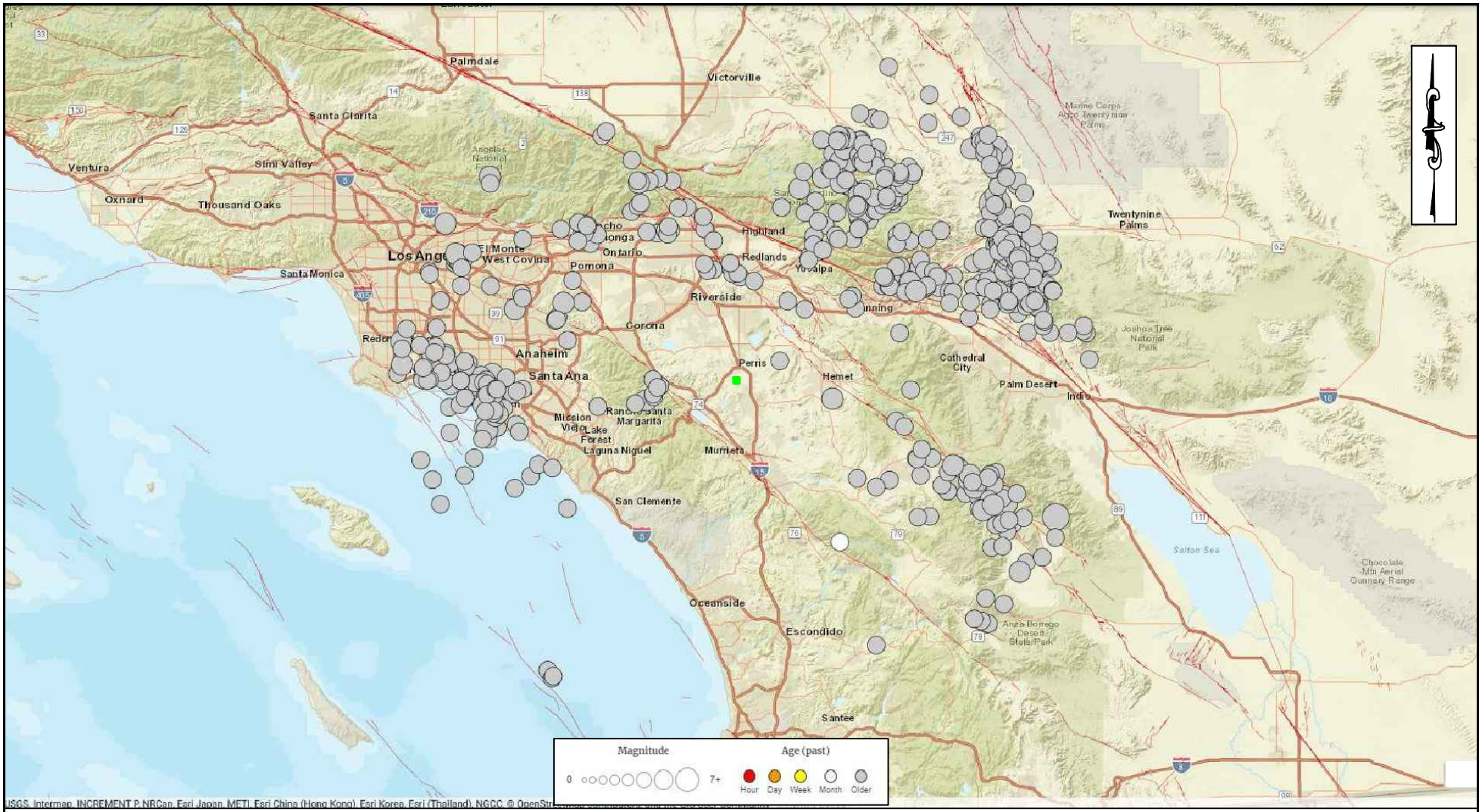
LOR GEOTECHNICAL GROUP, INC.



REGIONAL GEOLOGIC MAP

(Morton, 2003)

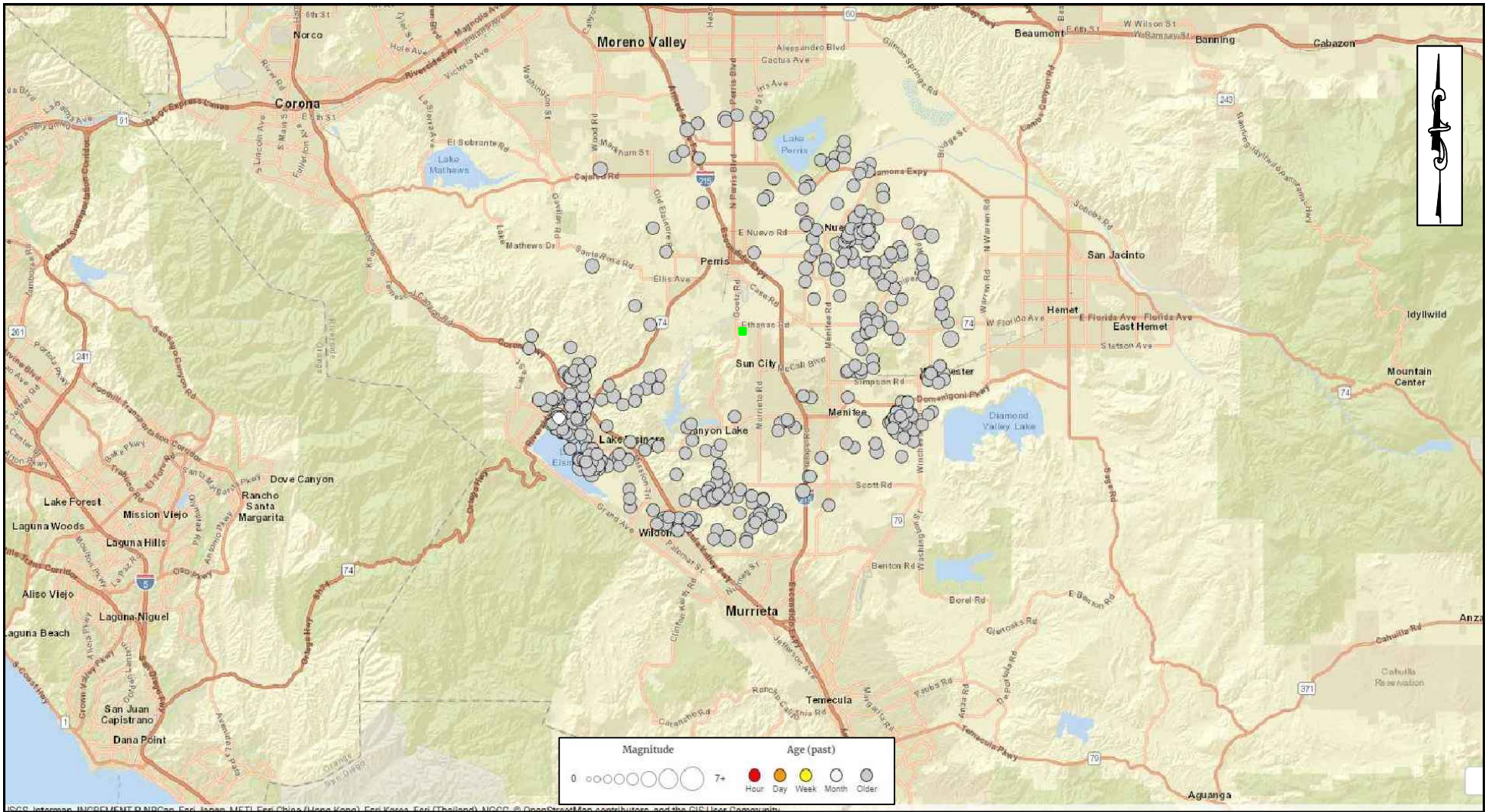
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CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-3
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2022
		SCALE:	1" ≈ 2,000'



U.S. Geologic Survey (2021) real-time earthquake epicenter map. Plotted are 531 epicenters of instrument-recorded events from 01/01/32 to present (02/08/22) of local magnitude 4+ within a radius of ~62 miles (100 kilometers) of the site. Location accuracy varies. The site is indicated by the green square. The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 100km Radius

PROJECT:	Proposed Industrial Development, Menifee, California	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-4
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2022
		SCALE:	1" ≈ 40km



U.S. Geologic Survey (2021) real-time earthquake epicenter map. Plotted are 431 epicenters of instrument-recorded events from 01/01/78 to present (02/08/22) of local magnitude 2+ within a radius of ~9.2 miles (15 kilometers) of the site. Location accuracy varies. The site is indicated by the green square. The selected magnitude corresponds to a threshold intensity value where very light damage potential begins. These events are also generally widely felt by persons. Red lines mark the surface traces of known Quaternary-age faults.

HISTORICAL SEISMICITY MAP - 15km Radius

PROJECT:	Proposed Industrial Development, Menifee, California	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	A-5
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2022
		SCALE:	1" ≈ 15km

APPENDIX B

Field Investigation Program and Boring Logs

APPENDIX B
FIELD INVESTIGATION

Subsurface Exploration

Our subsurface exploration of the site consisted of drilling 5 exploratory borings to depths between approximately 16.5 to 41feet below the existing ground surface using a Mobile B-61 drill rig on January 20, 2022. The approximate locations of the borings are shown on Enclosure A-2 within Appendix A.

The drilling exploration was conducted using a Mobile B-61 drill rig equipped with 8-inch diameter hollow stem augers. The soils were continuously logged by a geologist from this firm who inspected the site, created detailed logs of the borings, obtained undisturbed, as well as disturbed, soil samples for evaluation and testing, and classified the soils by visual examination in accordance with the Unified Soil Classification System.

Relatively undisturbed samples of the subsoils were obtained at a maximum interval of 5 feet. The samples were recovered by using a California split barrel sampler of 2.50 inch inside diameter and 3.25 inch outside diameter or a Standard Penetration Sampler (SPT) from the ground surface to the total depth explored. The samplers were driven by a 140 pound automatic trip hammer dropped from a height of 30 inches. The number of hammer blows required to drive the sampler into the ground the final 12 inches were recorded and further converted to an equivalent SPT N-value. Factors such as efficiency of the automatic trip hammer used during this investigation (80%), borehole diameter (8"), and rod length at the test depth were considered for further computing of equivalent SPT N-values corrected for field procedures (N60) which are included in the boring logs, Enclosures B-1 through B-5.

The undisturbed soil samples were retained in brass sample rings of 2.42 inches in diameter and 1.00 inch in height, and placed in sealed plastic containers. Disturbed soil samples were obtained at selected levels within the borings and placed in sealed containers for transport to our geotechnical laboratory.

All samples obtained were taken to our geotechnical laboratory for storage and testing. Detailed logs of the borings are presented on the enclosed Boring Logs, Enclosures B-1 through B-5. A Boring Log Legend is presented on Enclosure B-i. A Soil Classification Chart is presented as Enclosure B-ii.

CONSISTENCY OF SOIL

SANDS

SPT BLOWS	CONSISTENCY
0-4	Very Loose
4-10	Loose
10-30	Medium Dense
30-50	Dense
Over 50	Very Dense

COHESIVE SOILS

SPT BLOWS	CONSISTENCY
0-2	Very Soft
2-4	Soft
4-8	Medium
8-15	Stiff
15-30	Very Stiff
30-60	Hard
Over 60	Very Hard

SAMPLE KEY

Symbol	Description
	INDICATES CALIFORNIA SPLIT SPOON SOIL SAMPLE INDICATES BULK SAMPLE INDICATES SAND CONE OR NUCLEAR DENSITY TEST INDICATES STANDARD PENETRATION TEST (SPT) SOIL SAMPLE

TYPES OF LABORATORY TESTS

1	Atterberg Limits
2	Consolidation
3	Direct Shear (undisturbed or remolded)
4	Expansion Index
5	Hydrometer
6	Organic Content
7	Proctor (4", 6", or Cal216)
8	R-value
9	Sand Equivalent
10	Sieve Analysis
11	Soluble Sulfate Content
12	Swell
13	Wash 200 Sieve

HAND AUGER BORING LOG LEGEND

PROJECT:	Proposed Industrial Development, Menifee, California	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	B-i
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2022

SOIL CLASSIFICATION CHART

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS	GRAVEL AND GRAVELLY SOILS	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
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	SAND AND SANDY SOILS	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
	MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS	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
MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	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

PARTICLE SIZE LIMITS

BOULDERS	COBBLES	GRAVEL		SAND			SILT OR CLAY
		COARSE	FINE	COARSE	MEDIUM	FINE	
12"	3"	3/4"	No . 4	No. 10	No. 40	200	

(U.S. STANDARD SIEVE SIZE)

SOIL CLASSIFICATION CHART

PROJECT:	Proposed Industrial Development, Menifee, California	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ENCLOSURE:**	B-ii
LOR GEOTECHNICAL GROUP, INC.		**DATE:**	February 2022

LOG OF BORING B-1

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
	TEST DATA								
0		4, 8, 9, 10, 11						SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, approximately 15% medium grained sand, 40% fine grained sand, 45% silty fines with clay, red brown, damp, loose.
								ML	@ 1 foot, OLDER ALLUVIUM: SANDY SILT, trace gravel to 1/2", trace coarse grained sand, approximately 10% medium grained sand, 35% fine grained sand, 55% silty fines with clay, red brown, dramp.
	5		10.8		108.2				
5	38		13.5		104.5			CL	@ 5 feet, LEAN CLAY with SAND, approximately 10% medium grained sand, 30% fine grained sand, 60% clayey fines of low plasticity, red brown, damp to moist, trace thin calcite stringers.
	64		20.5		106.3			SM	from 6 to 7 feet, some gravel, rig chatter.
									@ 7 feet, SILTY SAND, approximately 10% coarse grained sand, 25% medium grained sand, 25% fine grained sand, 40% silty fines, red brown, moist, micaceous.
10	70 for 11"		14.7		108.9				@ 10 feet, GRANITIC BEDROCK: highly weathered, coarse to medium grained, red brown.
15	77 for 11"		21.3		105.9				@ 15 feet, becomes slightly less weathered, yellow brown.
20	83 for 10"		10.5		122.4				@ 20 feet, red brown.
									END OF BORING @ 20.83'
									Fill to 1'
									No groundwater
									Bedrock @ 10'
25									

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1442
		DATE DRILLED:	January 20, 2022
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-1

LOG OF BORING B-2

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		3, 4, 7, 9, 10, 11						GW SM	@ 0 feet, 3/4" gravel. @ 0.8 feet, FILL/TOPSOIL: SILTY SAND, approximately 5% coarse grained sand, 15% medium grained sand, 45% fine grained sand, 35% silty fines, red brown, damp. @ 1 foot, OLDER ALLUVIUM: SILTY SAND, approximately 5% coarse grained sand, 15% medium grained sand, 35% fine grained sand, 45% silty fines with clay, red brown, damp, trace pinhole porosity.
	27		12.7		119.1				
5	26		16.1		103.1				
	78		12.0		105.6				@ 6.5 feet, GRANITIC BEDROCK: moderately weathered, coarse to medium grained, tan, damp.
10	68 for 11"		11.8		106.9				
15	116 for 11"		13.6						END OF BORING @ 16.42' Fill to 1' No groundwater Bedrock @ 6.5'
20									

TEST DATA

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1444
		DATE DRILLED:	January 20, 2022
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-2

LOG OF BORING B-3

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0	16		4.2		98.5			SM ML	@ 0 feet, FILL/TOPSOIL: SILTY SAND, trace gravel to 1", approximately 5% coarse grained sand, 15% medium grained sand, 45% fine grained sand, 35% silty fines with trace clay, brown, dry.
5	25		7.7		110.1				@ 1 foot, OLDER ALLUVIUM: SANDY SILT, approximately 5% coarse grained sand, 10% medium grained sand, 20% fine grained sand, 65% silty fines with clay, red brown, dry, some pinhole porosity.
	64 for 10'		16.5		97.9			SM	@ 5 feet, trace gravel to 1/2", slightly coarser grained.
									@ 7 feet, SILTY SAND, approximately 15% coarse grained sand, 30% medium grained sand, 30% fine grained sand, 25% silty fines, red brown, moist.
10	46 for 5"		14.5		105.6				@ 10 feet, GRANITIC BEDROCK: slightly to moderately weathered, coarse to medium grained, red brown.
15	65 for 6"		15.7						
20	44		18.2						@ 20 feet, slightly coarser grained, damp.
25	73		23.4						
30	117		20.1						@ 30 feet, difficult drilling to end of boring.
35	172 for 10"		25.2						
40	124		28.1						END OF BORING @ 41' due to very slow progress. Fill to 1' No groundwater Bedrock @ 10'
45									

TEST DATA

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1441
		DATE DRILLED:	January 20, 2022
LOR	**GEOTECHNICAL GROUP, INC.**	**EQUIPMENT:**	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-3

LOG OF BORING B-4

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0		9, 10, 11						SM	@ 0 feet, FILL/TOPSOIL: SILTY SAND, trace gravel to 1", approximately 10% coarse grained sand, 20% medium grained sand, 35% fine grained sand, 35% silty fines, brown, dry.
								ML	
	21		6.6		103.1				@ 1 foot, OLDER ALLUVIUM: SANDY SILT, approximately 5% coarse grained sand, 10% medium grained sand, 30% fine grained sand, 55% silty fiines with clay, red brown, damp.
									@ 2 feet, trace pinhole porosity, dry.
5	31		11.7		110.2			CL	@ 5 feet, LEAN CLAY with SAND, approximately 5% coarse grained sand, 10% medium grained sand, 20% fine grained sand, 65% clayey fines of low plasticity, red brown, damp.
10	61		5.9		116.8				@ 10 feet, GRANTIIC BEDROCK: highly weathered, friable, coarse to medium grained, yellow brown, dry.
15	46 for 6"		15.2						@ 15 feet, less weathered, finer grained, damp, rings disturbed.
									END OF BORING @ 15.5'
									Fill to 1'
									No goundwater
									Bedrock @ 10'
20									

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1445
LOR	GEOTECHNICAL GROUP, INC.	**DATE DRILLED:**	January 20, 2022
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-4

LOG OF BORING B-5

DEPTH IN FEET	SPT BLOW COUNTS	LABORATORY TESTS	MOISTURE CONTENT (%)		DRY DENSITY (PCF)	SAMPLE TYPE	LITHOLOGY	U.S.C.S.	DESCRIPTION
0								SM	@ 0 feet, FILL/TOPSOIL: **SILTY SAND, trace gravel to 1", approximately 5% coarse grained sand, 10% medium grained sand, 60% fine grained sand, 25% silty fines, brown, dry.**
								ML	@ 1 foot, OLDER ALLUVIUM: **SANDY SIILT, apprximately 5% coarse grained sand, 10% medium grained sand, 25% fine grained sand, 60% silty fines with clay, red brown, dry, some pinhole porosity.**
	13		6.4		104.8				
5	10	2	8.5		106.8				@ 5 feet, increase in clay content, damp, remains porous.
	68		5.2		129.3				@ 7 feet, GRANTITIC BEDROCK: **moderately weathered, friable, coarse to medium grained, yellow brown, dry.**
10	68		5.2						@ 10 feet, rings disturbed.
15	46 for 6"		6.0						@ 15 feet, rings disturbed.
									END OF BORING @ 15.5'
									Fill to 1'
									No groundwater
									Bedrock @ 7'
20									

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**ELEVATION:**	1447
LOR GEOTECHNICAL GROUP, INC.		**DATE DRILLED:**	January 20, 2022
		EQUIPMENT:	Mobile B-61
		HOLE DIA.: 8"	**ENCLOSURE:** B-5

APPENDIX C

Laboratory Testing Program and Test Results

APPENDIX C
LABORATORY TESTING

General

Selected soil samples obtained from the borings were tested in our geotechnical laboratory to evaluate the physical properties of the soils affecting foundation design and construction procedures. The laboratory testing program performed in conjunction with our investigation included moisture content, dry density, laboratory compaction characteristics, direct shear, sieve analysis, sand equivalent, R-value, expansion index, Atterberg limits, and soluble sulfate content. Descriptions of the laboratory tests are presented in the following paragraphs:

Moisture Density Tests

The moisture content and dry density information provides an indirect measure of soil consistency for each stratum, and can also provide a correlation between soils on this site. The dry unit weight and field moisture content were determined for selected undisturbed samples, in accordance with ASTM D 2921 and ASTM D 2216, respectively, and the results are shown on the boring logs, Enclosures B-1 through B-5 for convenient correlation with the soil profile.

Laboratory Compaction

A selected soil sample was tested in the laboratory to determine compaction characteristics using the ASTM D 1557 compaction test method. The results are presented in the following table:

LABORATORY COMPACTION				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Maximum Dry Density (pcf)**	**Optimum Moisture Content (percent)**
B-2	0-3	(SM) Silty Sand	138.0	7.5

Direct Shear Test

Shear tests are performed in general accordance with ASTM D 3080 with a direct shear machine at a constant rate-of-strain (0.04 inches/minute). The machine is designed to test a sample partially extruded from a sample ring in single shear. Samples are tested at varying normal loads in order to evaluate the shear strength parameters, angle of internal friction and cohesion. Samples are tested in remolded condition (90 percent relative compaction per ASTM D 1557) and soaked, to represent the worse case conditions expected in the field.

The results of the shear test on a selected soil sample is presented in the following table:

DIRECT SHEAR TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Apparent Cohesion (psf)**	**Angle of Internal Friction (degrees)**
B-2	0-3	(SM) Silty Sand	150	27

Sieve Analysis

A quantitative determination of the grain size distribution was performed for selected samples in accordance with the ASTM D 422 laboratory test procedure. The determination is performed by passing the soil through a series of sieves, and recording the weights of retained particles on each screen. The results of the grain size distribution analyses are presented graphically on Enclosure C-1.

Sand Equivalent

The sand equivalent of selected soils were evaluated using the California Sand Equivalent Test Method, Caltrans Number 217. The results of the sand equivalent tests are presented with the grain size distribution analyses on Enclosure C-1.

R-Value Test

A soil sample was obtained at probable pavement subgrade level, and was tested to determine its R-value using the California R-Value Test Method, Caltrans Number 301. The results of the R-value test is presented on Enclosure C-1.

Expansion Index Test

Remolded samples are tested to determine their expansion potential in accordance with the Expansion Index (EI) test. The test is performed in accordance with the Uniform Building Code Standard 18-2. The test result for a select soil sample is presented in the following table:

EXPANSION INDEX TEST				
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Expansion Index (EI)**	**Expansion Potential**
B-1	0-3	(ML) Silty Sand	18	Very Low
B-2	0-3	(SM) Silty Sand	3	Very Low
Expansion Index:	0-20 Very low	21-50 Low	51-90 Medium	91-130 High

Consolidation Test

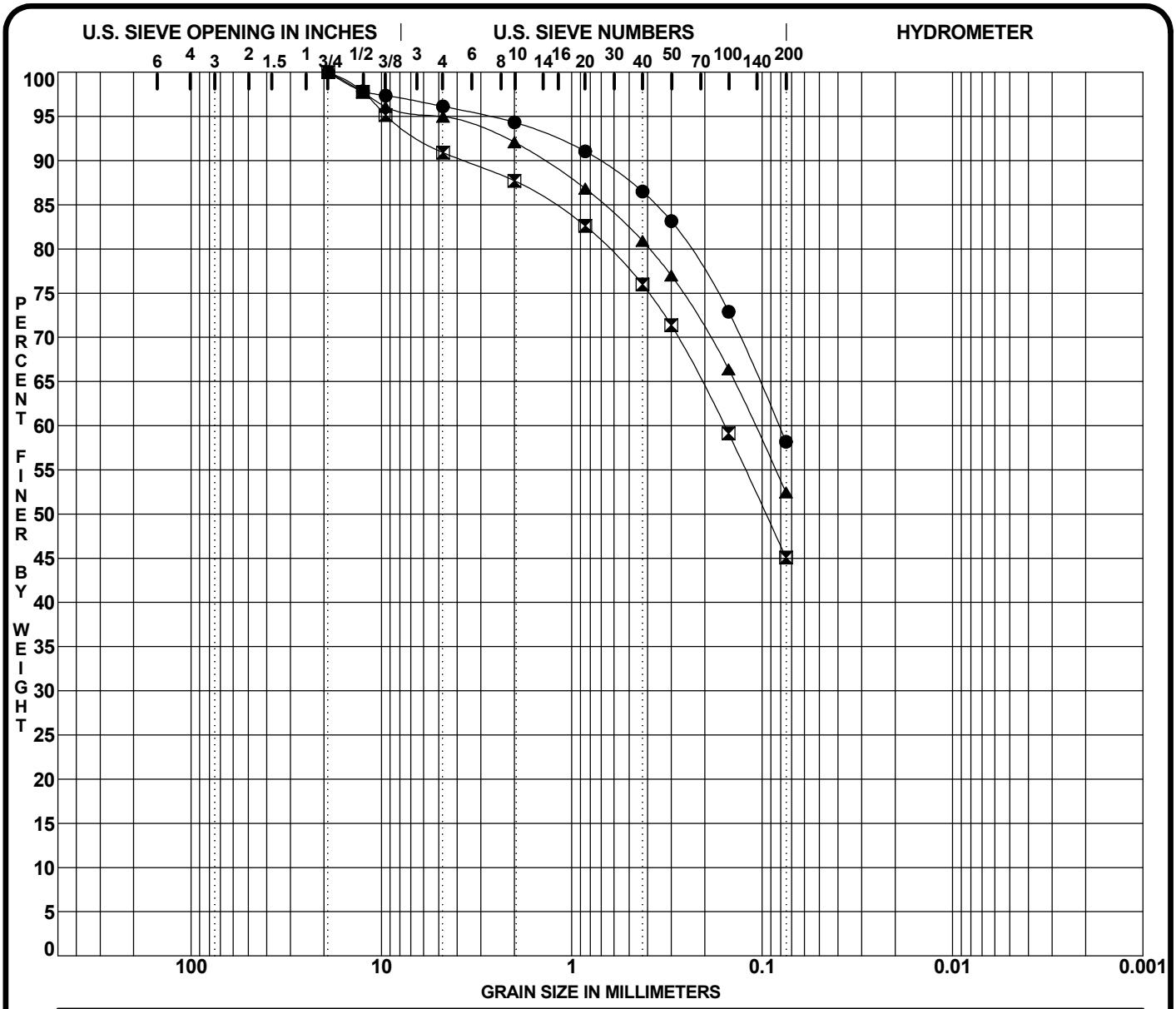
The apparatus used for the consolidation tests (odometer) is designed to test a one-inch high portion of the undisturbed soil sample as contained in a sample ring. Porous stones and filler paper are placed in contact with the top and bottom of the specimen to permit the addition or release of water. Loads are applied to the test specimen in specified increments, and the resulting axial deformations are recorded. The results are plotted as log of axial pressure versus consolidation or compression, expressed as strain or sample height.

Samples are tested at field and greater-than field moisture contents. The results are shown on Enclosure C-2.

Soluble Sulfate Content Test

The soluble sulfate content of a selected subgrade soil was evaluated. The concentration of soluble sulfates in the soil was determined by measuring the optical density of a barium sulfate precipitate. The precipitate results from a reaction of barium chloride with water extractions from the soil sample. The measured optical density is correlated with readings on precipitates of known sulfate concentrations. The test result is presented in the following table:

SOLUBLE SULFATE CONTENT TEST			
Boring Number	**Sample Depth (feet)**	**Soil Description (U.S.C.S.)**	**Sulfate Content (% by weight)**
B-1	0-3	(ML) Sandy Silt	< 0.005
B-2	0-3	(SM) Silty Sand	< 0.005
B-4	0-3	(ML) Sandy Silt	< 0.005



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Soil Classification	SE	RV	PL	PI	Cc	Cu
●	B-1	@ 0-3'	(ML) Sandy Silt	8	12				
⊠	B-2	@ 0-3'	(SM) Silty Sand	11	--				
▲	B-4	@ 0-3'	(ML) Sandy Siilt	9	--				

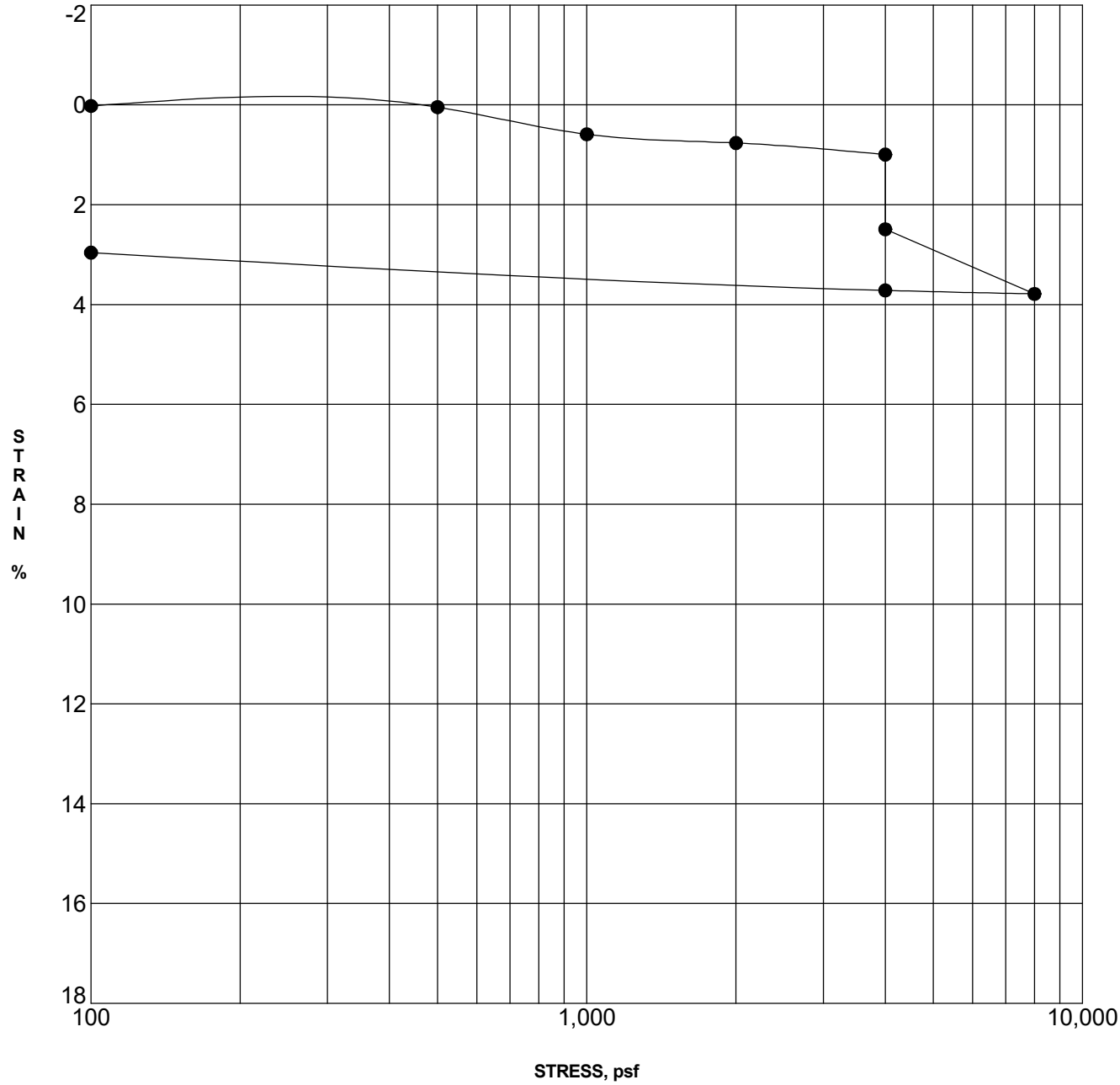
	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-1	@ 0-3'	19.00	0.08			3.9	38.0	58.2	
⊠	B-2	@ 0-3'	19.00	0.16			9.1	45.8	45.1	
▲	B-4	@ 0-3'	19.00	0.11			5.0	42.5	52.4	

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**DATE:**	February 2022

GRADATION CURVES

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: C-1



Specimen Identification		Classification	DD	MC%
● B-5 @ 5'		*(ML) Sandy Silt*	109	9

PROJECT:	Proposed Industrial Developemnt	**PROJECT NO.:**	23796.1
CLIENT:	Compass Danbe Real Estate Partners II, LLC	**DATE:**	February 2022

CONSOLIDATION TEST

LOR GEOTECHNICAL GROUP, INC.

ENCLOSURE: C-2

APPENDIX D

Seismic Design Spectra

Project: APN 330-180-012, 26201 Wheat Street, Menifee
Project Number: 23796.1
Client: Compass Danbe Real Estate Partners II, LLC
Site Lat/Long: 33.74081/-117.22049
Controlling Seismic Source: Elsinore

REFERENCE	NOTATION	VALUE
Site Class	C, D, D default, or E	D measured
Site Class D - Table 11.4-1	F_a	1.0
Site Class D - 21.3(ii)	F_v	2.5
$0.2*(S_{D1}/S_{DS})$	T_0	0.130
S_{D1}/S_{DS}	T_S	0.652
Fundamental Period (12.8.2)	T	Period
Seismic Design Maps or Fig 22-14	T_L	8
Equation 11.4-4 - $2/3*S_{M1}$	S_{D1}	0.6229*
Equation 11.4-2 - F_V*S_1	S_{M1}	0.9344*

REFERENCE	NOTATION	VALUE
Fv (Table 11.4-2)[Used for General Spectrum]	F_v	1.8
Design Maps	S_s	1.432
Design Maps	S_1	0.527
Equation 11.4-1 - F_A*S_S	S_{MS}	1.432*
Equation 11.4-3 - $2/3*S_{MS}$	S_{DS}	0.955*
Design Maps	PGA	0.5
Table 11.8-1	F_{PGA}	1.1
Equation 11.8-1 - $F_{PGA}*PGA$	PGA_M	0.55*
Section 21.5.3	80% of PGA_M	0.440
Design Maps	C_{RS}	0.936
Design Maps	C_{R1}	9.21

RISK COEFFICIENT

Cr - At Perods <=0.2, Cr=C_{RS}	C_{RS}	0.936
Cr - At Periods >=1.0, Cr=C_{R1}	C_{R1}	9.21

Cr - At Periods between 0.2 and 1.0 use trendline formula to complete

Period	Cr
0.200	0.936
0.300	1.970
0.400	3.005
0.500	4.039
0.600	5.073
0.680	5.900
1.000	9.21

* **Code based design value**. See accompanying data for Site Specific Design values.

Mapped values from https://seismicmaps.org/

PROBABILISTIC SPECTRA[1]
2% in 50 year Exceedence

Project No: 23796.1

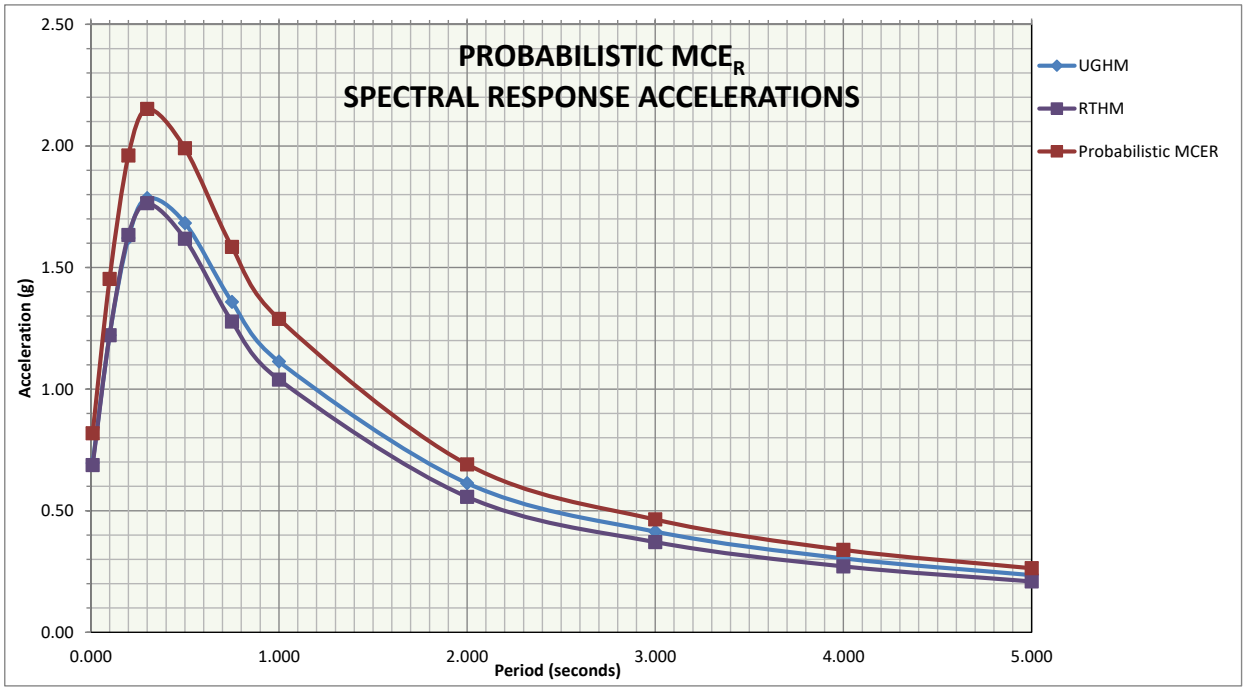
Period	UGHM	RTHM	Max Directional Scale Factor[2]	Probabilistic MCE
0.010	0.696	0.688	1.19	0.819
0.100	1.221	1.221	1.19	1.453
0.200	1.621	1.634	1.20	1.961
0.300	1.785	1.764	1.22	2.152
0.500	1.683	1.618	1.23	1.990
0.750	1.359	1.278	1.24	1.585
1.000	1.113	1.039	1.24	1.288
2.000	0.613	0.557	1.24	0.691
3.000	0.414	0.371	1.25	0.464
4.000	0.304	0.271	1.25	0.339
5.000	0.235	0.209	1.26	0.263

Probabilistic PGA: 0.696

Is Probabilistic $Sa_{(max)}$<1.2F_a? NO

[1] Data Sources:
https://earthquake.usgs.gov/hazards/interactive/
https://earthquake.usgs.gov/designmaps/rtgm/

[2] Shahi-Baker RotD100/RotD50 Factors (2014)



DETERMINISTIC SPECTRUM

Largest Amplitudes of Ground Motions Considering All Sources Calculated using Weighted Mean of Attenuation Equations[1]

Controlling Source: Elsinore

Is Probabilistic $Sa_{(max)}$<1.2Fa? NO

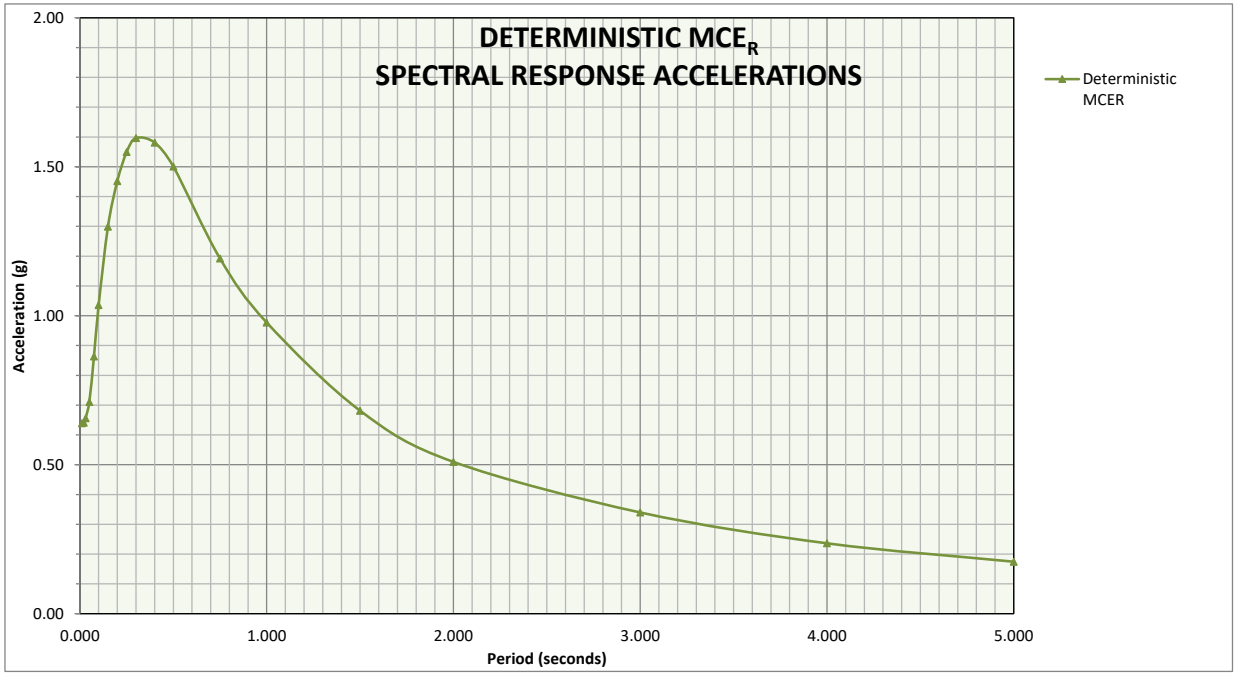
Period	Deterministic PSa Median + 1.σ for 5% Damping	Max Directional Scale Factor[2]	Deterministic MCE	Section 21.2.2 Scaling Factor Applied
0.010	0.537	1.19	0.639	0.639
0.020	0.539	1.19	0.641	0.641
0.030	0.551	1.19	0.656	0.656
0.050	0.597	1.19	0.710	0.710
0.075	0.725	1.19	0.863	0.863
0.100	0.870	1.19	1.036	1.036
0.150	1.082	1.20	1.299	1.299
0.200	1.210	1.20	1.452	1.452
0.250	1.280	1.21	1.549	1.549
0.300	1.309	1.22	1.596	1.596
0.400	1.286	1.23	1.581	1.581
0.500	1.220	1.23	1.501	1.501
0.750	0.961	1.24	1.192	1.192
1.000	0.788	1.24	0.977	0.977
1.500	0.549	1.24	0.681	0.681
2.000	0.411	1.24	0.509	0.509
3.000	0.272	1.25	0.340	0.340
4.000	0.189	1.25	0.236	0.236
5.000	0.138	1.26	0.174	0.174

Project No: 23796.1

Is Determinstic $Sa_{(max)}$<1.5*Fa?	NO
Section 21.2.2 Scaling Factor:	N/A
Deterministic PGA:	~~0.537~~
Is Deterministic PGA >=F_{PGA}*0.5?	NO
Deterministic PGA:	0.550

[1] NGAWest 2 GMPE worksheet and Uniform California Earthquake Rupture Forecast, Version 3 (UCERF3) - Time Dependent Model

[2] Shahi-Baker RotD100/RotD50 Factors (2014)



SITE SPECIFIC SPECTRA

Period	Probabilistic MCE	Deterministic MCE	Site-Specific MCE	Design Response Spectrum (Sa)
0.010	0.819	0.639	0.639	0.426
0.100	1.453	1.036	1.036	0.690
0.200	1.961	1.452	1.452	0.968
0.300	2.152	1.596	1.596	1.064
0.500	1.990	1.501	1.501	1.001
0.750	1.585	1.192	1.192	0.795
1.000	1.288	0.977	0.977	0.651
2.000	0.691	0.509	0.509	0.340
3.000	0.464	0.340	0.340	0.226
4.000	0.339	0.236	0.236	0.157
5.000	0.263	0.174	0.174	0.116

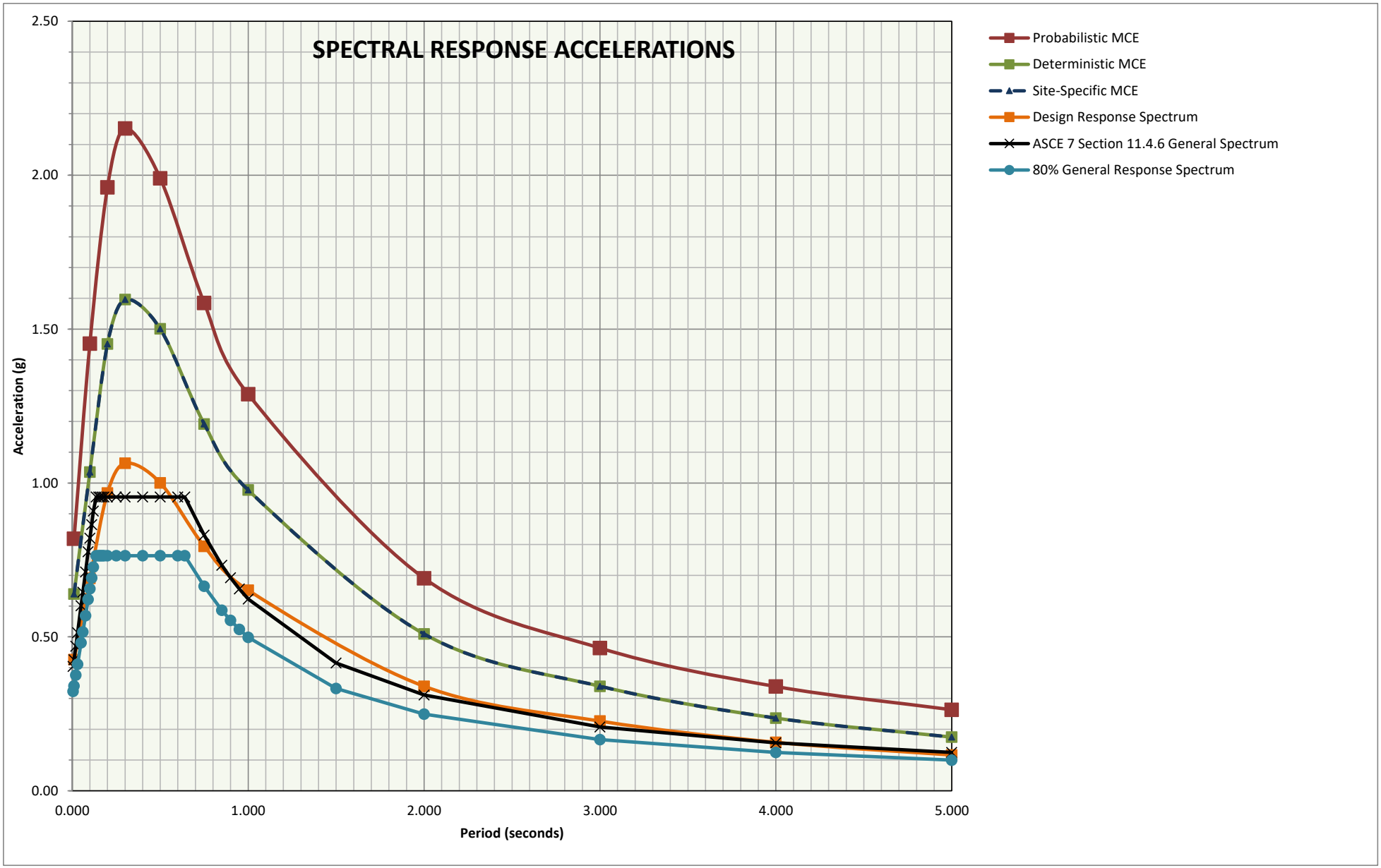
ASCE 7-16: Section 21.4
Site Specific

	Calculated Value	Design Value
SDS:	0.958	0.958
SD1:	0.679	0.679
SMS:	1.437	1.437
SM1:	1.019	1.019
Site Specific PGAm:	0.550	0.550
Site Class:	D measured	

Seismic Design Category - Short* D
Seismic Design Category - 1s* D
* Risk Categories I, II, or III

Period	ASCE 7 SECTION 11.4.6 General Spectrum	80% General Response Spectrum
0.005	0.404	0.323
0.010	0.426	0.341
0.020	0.470	0.376
0.030	0.514	0.411
0.050	0.601	0.481
0.060	0.645	0.516
0.075	0.711	0.569
0.090	0.777	0.622
0.100	0.821	0.657
0.110	0.865	0.692
0.120	0.909	0.727
0.136	0.955	0.764
0.150	0.955	0.764
0.160	0.955	0.764
0.170	0.955	0.764
0.180	0.955	0.764
0.200	0.955	0.764
0.250	0.955	0.764
0.300	0.955	0.764
0.400	0.955	0.764
0.500	0.955	0.764
0.600	0.955	0.764
0.640	0.955	0.764
0.750	0.831	0.664
0.850	0.733	0.586
0.900	0.692	0.554
0.950	0.656	0.525
1.000	0.623	0.498
1.500	0.415	0.332
2.000	0.311	0.249
3.000	0.208	0.166
4.000	0.156	0.125
5.000	0.125	0.100

Project No: 23796.1



Project No: 23796.1

APPENDIX E

Infiltration Test Results

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	26201 Wheat Street	Test Date:	January 21, 2022
Project No.:	23796.1	Test Hole No.:	P-1
Soil Classificaiton:	(ML) Sandy silt	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	7.8 ft.	Date Excavated:	January 20, 2022
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	9:01 AM	9:31 AM	30	0.50	0.50	43.00	44.00	94.00	94.00	1.00	50.50	30.0
2	9:31 AM	10:01 AM	30	0.50	1.00	44.00	45.00	94.00	94.00	1.00	49.50	30.0
3	10:01 AM	10:31 AM	30	0.50	1.50	45.00	46.00	94.00	94.00	1.00	48.50	30.0
4	10:31 AM	11:01 AM	30	0.50	2.00	46.00	47.00	94.00	94.00	1.00	47.50	30.0
5	11:01 AM	11:31 AM	30	0.50	2.50	47.00	48.00	94.00	94.00	1.00	46.50	30.0
6	11:31 AM	12:01 PM	30	0.50	3.00	48.00	49.00	94.00	94.00	1.00	45.50	30.0
7	12:01 PM	12:31 PM	30	0.50	3.50	49.00	50.00	94.00	94.00	1.00	44.50	30.0
8	12:31 PM	1:01 PM	30	0.50	4.00	50.00	51.00	94.00	94.00	1.00	43.50	30.0
9	1:01 PM	1:31 PM	30	0.50	4.50	51.00	52.00	94.00	94.00	1.00	42.50	30.0
10	1:31 PM	2:01 PM	30	0.50	5.00	48.00	49.00	94.00	94.00	1.00	45.50	30.0
11	2:01 PM	2:31 PM	30	0.50	5.50	49.00	50.00	94.00	94.00	1.00	44.50	30.0
12	2:31 PM	3:01 PM	30	0.50	6.00	50.00	51.00	94.00	94.00	1.00	43.50	30.0

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	44.00	
H_f	43.00	
ΔH	1.00	
H_{avg}	43.50	
I_t	**0.05**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

BOREHOLE METHOD PERCOLATION TEST RESULTS

Project:	26201 Wheat Street	Test Date:	January 21, 2022
Project No.:	23796.1	Test Hole No.:	P-2
Soil Classificaiton:	(ML) Sandy silt	Effective Hole Dia.*:	4.8 in.
Depth of Test Hole:	7.9 ft.	Date Excavated:	January 20, 2022
Tested By:	A.L.		

READING	TIME START	TIME STOP	TIME INTERVAL		TOTAL TIME	INITIAL WATER LEVEL	FINAL WATER LEVEL	INITIAL HOLE DEPTH	FINAL HOLE DEPTH	CHANGE IN WATER LEVEL	AVERAGE WETTED DEPTH	PERCOLATION RATE
			min	hr.	hr.	in.	in.	in.	in.	in.	in.	(min/in)
1	9:03 AM	9:33 AM	30	0.50	0.50	48.00	53.00	95.00	95.00	5.00	44.50	6.0
2	9:33 AM	10:03 AM	30	0.50	1.00	48.00	53.00	95.00	95.00	5.00	44.50	6.0
3	10:03 AM	10:33 AM	30	0.50	1.50	48.00	52.50	95.00	95.00	4.50	44.75	6.7
4	10:33 AM	11:03 AM	30	0.50	2.00	48.00	52.50	95.00	95.00	4.50	44.75	6.7
5	11:03 AM	11:33 AM	30	0.50	2.50	48.00	53.00	95.00	95.00	5.00	44.50	6.0
6	11:33 AM	12:03 PM	30	0.50	3.00	48.00	52.50	95.00	95.00	4.50	44.75	6.7
7	12:03 PM	12:33 PM	30	0.50	3.50	48.00	52.50	95.00	95.00	4.50	44.75	6.7
8	12:33 PM	1:03 PM	30	0.50	4.00	48.00	52.00	95.00	95.00	4.00	45.00	7.5
9	1:03 PM	1:33 PM	30	0.50	4.50	48.00	52.00	95.00	95.00	4.00	45.00	7.5
10	1:33 PM	2:03 PM	30	0.50	5.00	48.00	52.00	95.00	95.00	4.00	45.00	7.5
11	2:03 PM	2:33 PM	30	0.50	5.50	48.00	52.00	95.00	95.00	4.00	45.00	7.5
12	2:33 PM	3:03 PM	30	0.50	6.00	48.00	52.00	95.00	95.00	4.00	45.00	7.5

PERCOLATION RATE CONVERSION (Porchet Method):

H_O	47.00	
H_f	43.00	
ΔH	4.00	
H_{avg}	45.00	
I_t	**0.21**	in/hr (clear water rate)

* diameter adjusted to an effective diameter due to the loss in volume of water because of gravel packing

Appendix 4: Historical Site Conditions

Phase I Environmental Site Assessment or Other Information on Past Site Use

N/A

Appendix 5: LID Infeasibility

LID Technical Infeasibility Analysis

N/A

Appendix 6: BMP Design Details

BMP Sizing, Design Details and other Supporting Documentation

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 CASC

Date 3/24/2022

Designed by KJ

Case No

Company Project Number/Name 1494-0012

BMP Identification

BMP NAME / ID MWS 1

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}= 0.60 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)*
A	*20,795*	*Ornamental Landscaping*	*0.1*	*0.11*	*2297*			
B	*87,676*	*Roofs*	*1*	*0.89*	*78207*			
C	*99,484*	*Concrete or Asphalt*	*1*	*0.89*	*88739.7*			
	207955	***Total***			**169243.7**	**0.60**	***8462.2***	***24155***

Notes:

PROJECT INFORMATION	
ENGINEERED PRODUCT MANAGER	
ADS SALES REP	
PROJECT NO.	

Advanced Drainage Systems, Inc.

SiteAssist™
FOR STORMTECH
INSTALLATION INSTRUCTIONS
VISIT OUR APP

1494-0012 - WHEAT ST.

MENIFEE, CA

MC-7200 STORMTECH CHAMBER SPECIFICATIONS

1. CHAMBERS SHALL BE STORMTECH MC-7200.
2. CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
3. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101.
4. CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
5. THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
6. CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
7. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 450 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
8. ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
   - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
   - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD, THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
   - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
9. CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF MC-7200 CHAMBER SYSTEM

1. STORMTECH MC-7200 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
2. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
3. CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
   - STONESHOOTER LOCATED OFF THE CHAMBER BED.
   - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
   - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
4. THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
5. JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
6. MAINTAIN MINIMUM - 9" (230 mm) SPACING BETWEEN THE CHAMBER ROWS.
7. INLET AND OUTLET MANIFOLDS MUST BE INSERTED A MINIMUM OF 12" (300 mm) INTO CHAMBER END CAPS.
8. EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE MEETING THE AASHTO M43 DESIGNATION OF #3 OR #4.
9. STONE SHALL BE BROUGHT UP EVENLY AROUND CHAMBERS SO AS NOT TO DISTORT THE CHAMBER SHAPE. STONE DEPTHS SHOULD NEVER DIFFER BY MORE THAN 12" (300 mm) BETWEEN ADJACENT CHAMBER ROWS.
10. STONE MUST BE PLACED ON THE TOP CENTER OF THE CHAMBER TO ANCHOR THE CHAMBERS IN PLACE AND PRESERVE ROW SPACING.
11. THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIAL BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
12. ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

NOTES FOR CONSTRUCTION EQUIPMENT

1. STORMTECH MC-7200 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
2. THE USE OF EQUIPMENT OVER MC-7200 CHAMBERS IS LIMITED:
   - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
   - NO RUBBER TIRED LOADER, DUMP TRUCK, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH MC-3500/MC-7200 CONSTRUCTION GUIDE".
   - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH MC-7200 CONSTRUCTION GUIDE".
3. FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING.

USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY USING THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

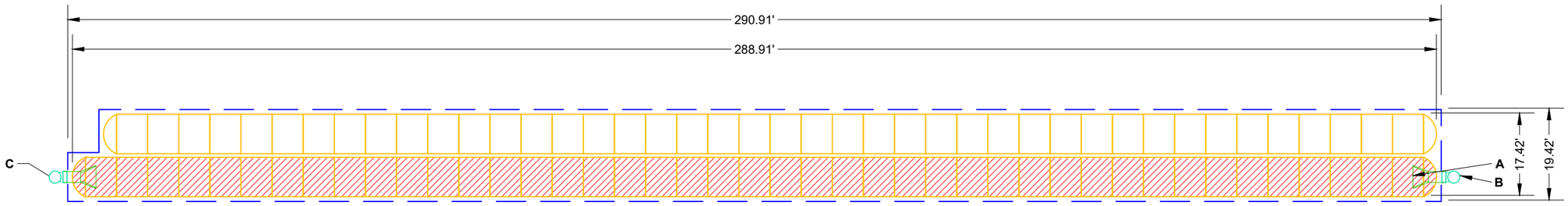
CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.

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PROPOSED LAYOUT		PROPOSED ELEVATIONS	
85	STORMTECH MC-7200 CHAMBERS	MAXIMUM ALLOWABLE GRADE (TOP OF PAVEMENT/UNPAVED):	43.50
4	STORMTECH MC-7200 END CAPS	MINIMUM ALLOWABLE GRADE (UNPAVED WITH TRAFFIC):	39.00
12	STONE ABOVE (in)	MINIMUM ALLOWABLE GRADE (UNPAVED NO TRAFFIC):	38.50
9	STONE BELOW (in)	MINIMUM ALLOWABLE GRADE (TOP OF RIGID CONCRETE PAVEMENT):	38.50
40	STONE VOID	MINIMUM ALLOWABLE GRADE (BASE OF FLEXIBLE PAVEMENT):	38.50
24155	INSTALLED SYSTEM VOLUME (CF) (PERIMETER STONE INCLUDED) (COVER STONE INCLUDED) (BASE STONE INCLUDED)	TOP OF STONE:	37.50
		TOP OF MC-7200 CHAMBER:	36.50
		24" ISOLATOR ROW PLUS INVERT:	31.69
		24" ISOLATOR ROW PLUS INVERT:	31.69
5589	SYSTEM AREA (SF)	BOTTOM OF MC-7200 CHAMBER:	31.50
620.7	SYSTEM PERIMETER (ft)	BOTTOM OF STONE:	30.75

*INVERT ABOVE BASE OF CHAMBER

PART TYPE	ITEM ON LAYOUT	DESCRIPTION	INVERT*	MAX FLOW
FLAMP	A	INSTALL FLAMP ON 24" ACCESS PIPE / PART#: MC720024RAMP (TYP 2 PLACES)		
NYLOPLAST (INLET W/ ISO PLUS ROW)	B	30" DIAMETER (24.00" SUMP MIN)		
NYLOPLAST (INLET W/ ISO PLUS ROW)	C	30" DIAMETER (24.00" SUMP MIN)		



ISOLATOR ROW PLUS (SEE DETAIL)

NO WOVEN GEOTEXTILE

BED LIMITS

NOTES

- MANIFOLD SIZE TO BE DETERMINED BY SITE DESIGN ENGINEER. SEE TECH NOTE #6.32 FOR MANIFOLD SIZING GUIDANCE.
- DUE TO THE ADAPTATION OF THIS CHAMBER SYSTEM TO SPECIFIC SITE AND DESIGN CONSTRAINTS, IT MAY BE NECESSARY TO CUT AND COUPLE ADDITIONAL PIPE TO STANDARD MANIFOLD COMPONENTS IN THE FIELD.
- THE SITE DESIGN ENGINEER MUST REVIEW ELEVATIONS AND IF NECESSARY ADJUST GRADING TO ENSURE THE CHAMBER COVER REQUIREMENTS ARE MET.
- THIS CHAMBER SYSTEM WAS DESIGNED WITHOUT SITE-SPECIFIC INFORMATION ON SOIL CONDITIONS OR BEARING CAPACITY. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR DETERMINING THE SUITABILITY OF THE SOIL AND PROVIDING THE BEARING CAPACITY OF THE INSITU SOILS. THE BASE STONE DEPTH MAY BE INCREASED OR DECREASED ONCE THIS INFORMATION IS PROVIDED.
- **NOT FOR CONSTRUCTION:** THIS LAYOUT IS FOR DIMENSIONAL PURPOSES ONLY TO PROVE CONCEPT & THE REQUIRED STORAGE VOLUME CAN BE ACHIEVED ON SITE.

1494-0012 - WHEAT ST.
MENIFEE, CA

DATE:
DRAWN: RU
PROJECT #:
CHECKED: N/A

DATE	DRW	CHK	DESCRIPTION

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCT(S) DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

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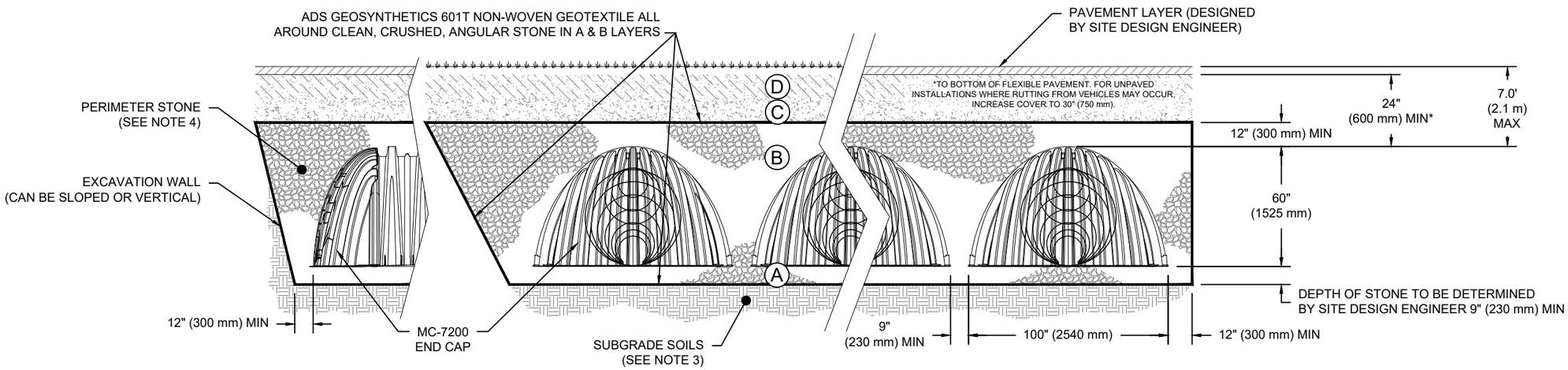
4640 TRUEMAN BLVD
HILLIARD, OH 43026
1-800-733-7473

0 25' 50'

ACCEPTABLE FILL MATERIALS: STORMTECH MC-7200 CHAMBER SYSTEMS

MATERIAL LOCATION		DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	**FINAL FILL:** FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER	ANY SOIL/ROCK MATERIALS, NATIVE SOILS, OR PER ENGINEER'S PLANS. CHECK PLANS FOR PAVEMENT SUBGRADE REQUIREMENTS.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	**INITIAL FILL:** FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 24" (600 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. MOST PAVEMENT SUBBASE MATERIALS CAN BE USED IN LIEU OF THIS LAYER.	AASHTO M145[1] A-1, A-2-4, A-3 OR AASHTO M43[1] 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 24" (600 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 12" (300 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS.
B	**EMBEDMENT STONE:** FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	NO COMPACTION REQUIRED.
A	**FOUNDATION STONE:** FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE	AASHTO M43[1] 3, 4	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE.[2,3]

PLEASE NOTE:
1. THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
2. STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERAGES WITH A VIBRATORY COMPACTOR.
3. WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
4. ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.



NOTES:

1. CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS" CHAMBER CLASSIFICATION 60x101
2. MC-7200 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
3. THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
4. PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
5. REQUIREMENTS FOR HANDLING AND INSTALLATION:
   - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
   - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 3".
   - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 450 LBS/IN/IN. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

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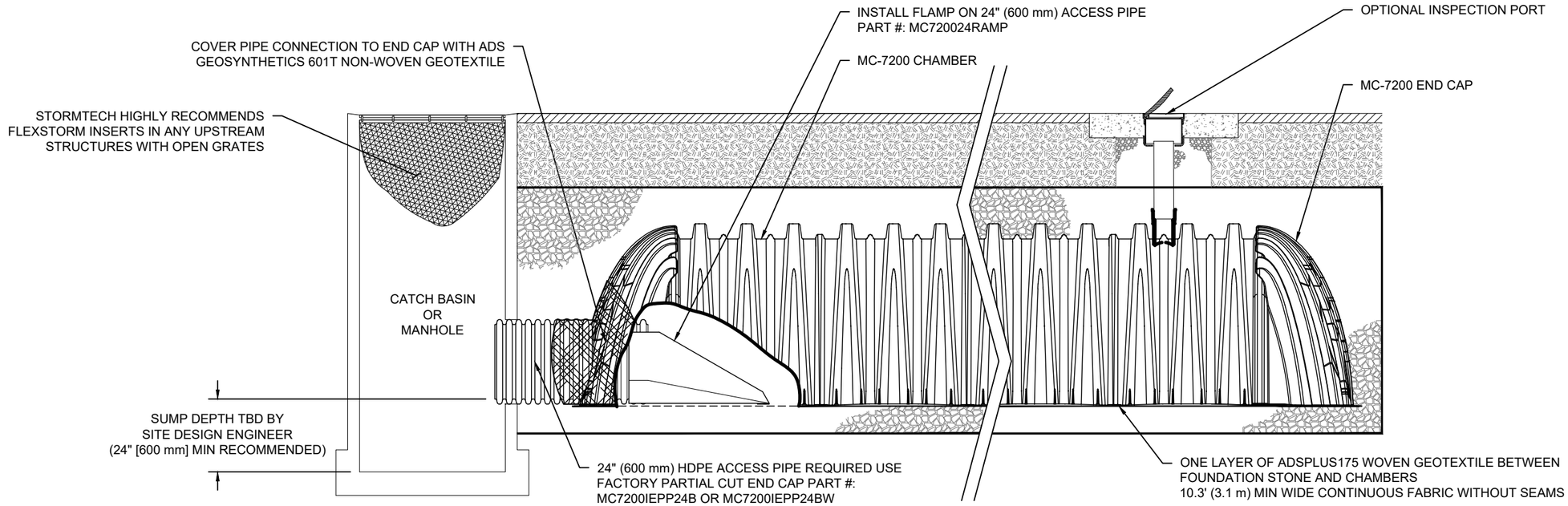
DATE	DRW	CHK	DESCRIPTION

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SHEET
3 OF 6

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MC-7200 ISOLATOR ROW PLUS DETAIL
NTS

INSPECTION & MAINTENANCE

STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- A. INSPECTION PORTS (IF PRESENT)
  - A.1. REMOVE/OPEN LID ON NYLOPLAST INLINE DRAIN
  - A.2. REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - A.3. USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - A.4. LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - A.5. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
  - B.1. REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - B.2. USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
    - i) MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
    - ii) FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - B.3. IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.

STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JETVAC PROCESS
- A. A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPREAD OF 45" (1.1 m) OR MORE IS PREFERRED
- B. APPLY MULTIPLE PASSES OF JETVAC UNTIL BACKFLUSH WATER IS CLEAN
- C. VACUUM STRUCTURE SUMP AS REQUIRED

STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.

STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

NOTES

1. INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.

2. CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

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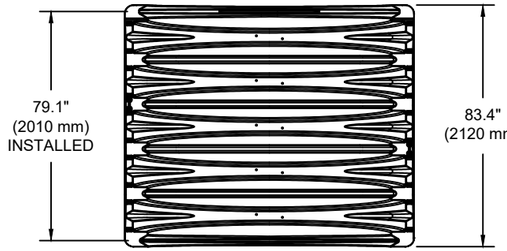
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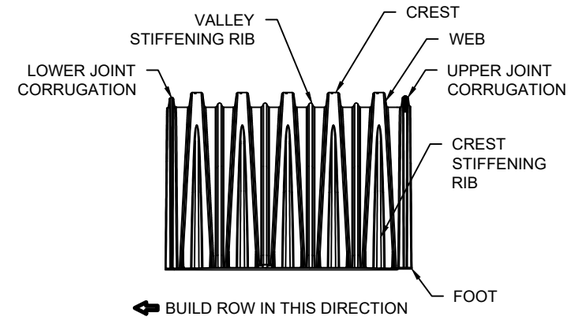
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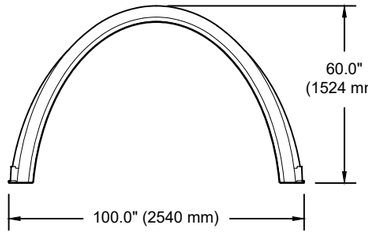
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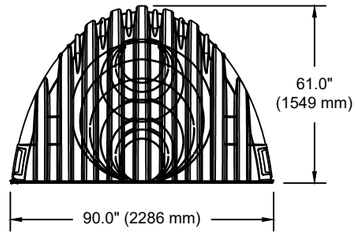
MC-7200 TECHNICAL SPECIFICATION

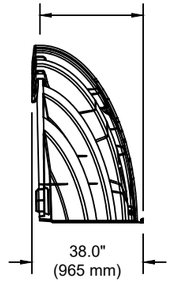
NTS











NOMINAL CHAMBER SPECIFICATIONS

SIZE (W X H X INSTALLED LENGTH)	100.0" X 60.0" X 79.1"	(2540 mm X 1524 mm X 2010 mm)
CHAMBER STORAGE	175.9 CUBIC FEET	(4.98 m³)
MINIMUM INSTALLED STORAGE*	267.3 CUBIC FEET	(7.56 m³)
WEIGHT (NOMINAL)	205 lbs.	(92.9 kg)

NOMINAL END CAP SPECIFICATIONS

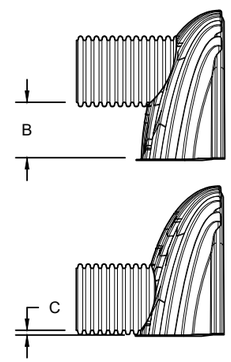
SIZE (W X H X INSTALLED LENGTH)	90.0" X 61.0" X 32.8"	(2286 mm X 1549 mm X 833 mm)
END CAP STORAGE	39.5 CUBIC FEET	(1.12 m³)
MINIMUM INSTALLED STORAGE*	115.3 CUBIC FEET	(3.26 m³)
WEIGHT (NOMINAL)	90 lbs.	(40.8 kg)

*ASSUMES 12" (305 mm) STONE ABOVE, 9" (229 mm) STONE FOUNDATION AND BETWEEN CHAMBERS, 12" (305 mm) STONE PERIMETER IN FRONT OF END CAPS AND 40% STONE POROSITY.

PARTIAL CUT HOLES AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"
PARTIAL CUT HOLES AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"
END CAPS WITH A PREFABRICATED WELDED STUB END WITH "W"

PART #	STUB	B	C
MC7200IEPP06T	6" (150 mm)	42.54" (1081 mm)	---
MC7200IEPP06B		---	0.86" (22 mm)
MC7200IEPP08T	8" (200 mm)	40.50" (1029 mm)	---
MC7200IEPP08B		---	1.01" (26 mm)
MC7200IEPP10T	10" (250 mm)	38.37" (975 mm)	---
MC7200IEPP10B		---	1.33" (34 mm)
MC7200IEPP12T	12" (300 mm)	35.69" (907 mm)	---
MC7200IEPP12B		---	1.55" (39 mm)
MC7200IEPP15T	15" (375 mm)	32.72" (831 mm)	---
MC7200IEPP15B		---	1.70" (43 mm)
MC7200IEPP18T	18" (450 mm)	29.36" (746 mm)	---
MC7200IEPP18TW			
MC7200IEPP18B		---	1.97" (50 mm)
MC7200IEPP18BW			
MC7200IEPP24T	24" (600 mm)	23.05" (585 mm)	---
MC7200IEPP24TW			
MC7200IEPP24B		---	2.26" (57 mm)
MC7200IEPP24BW			
MC7200IEPP30BW	30" (750 mm)	---	2.95" (75 mm)
MC7200IEPP36BW	36" (900 mm)	---	3.25" (83 mm)
MC7200IEPP42BW	42" (1050 mm)	---	3.55" (90 mm)

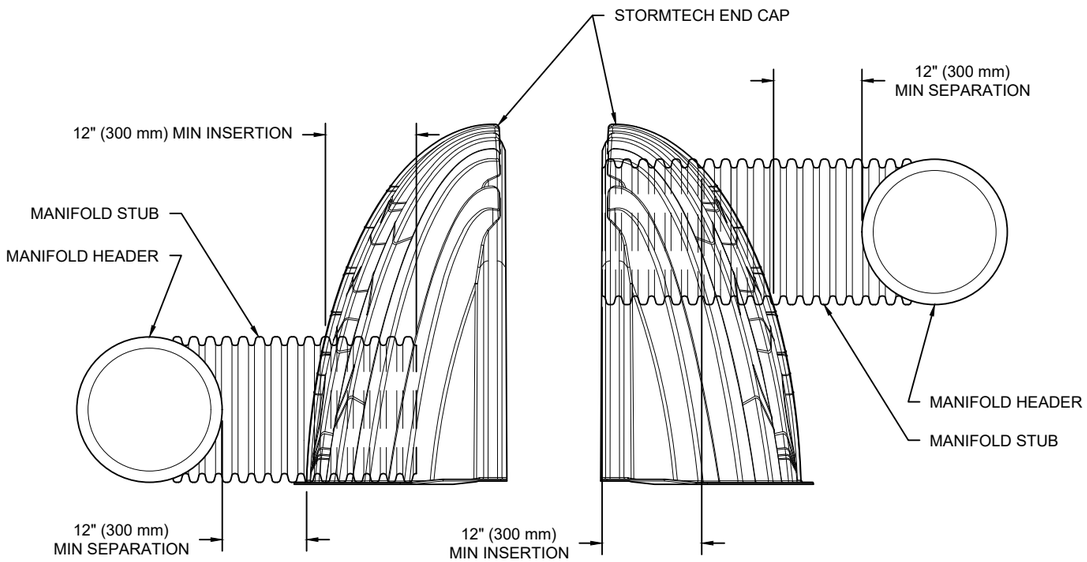
NOTE: ALL DIMENSIONS ARE NOMINAL



CUSTOM PREFABRICATED INVERTS ARE AVAILABLE UPON REQUEST. INVENTORIED MANIFOLDS INCLUDE 12-24" (300-600 mm) SIZE ON SIZE AND 15-48" (375-1200 mm) ECCENTRIC MANIFOLDS. CUSTOM INVERT LOCATIONS ON THE MC-7200 END CAP CUT IN THE FIELD ARE NOT RECOMMENDED FOR PIPE SIZES GREATER THAN 10" (250 mm). THE INVERT LOCATION IN COLUMN 'B' ARE THE HIGHEST POSSIBLE FOR THE PIPE SIZE.

MC-SERIES END CAP INSERTION DETAIL

NTS



NOTE: MANIFOLD STUB MUST BE LAID HORIZONTAL FOR A PROPER FIT IN END CAP OPENING.

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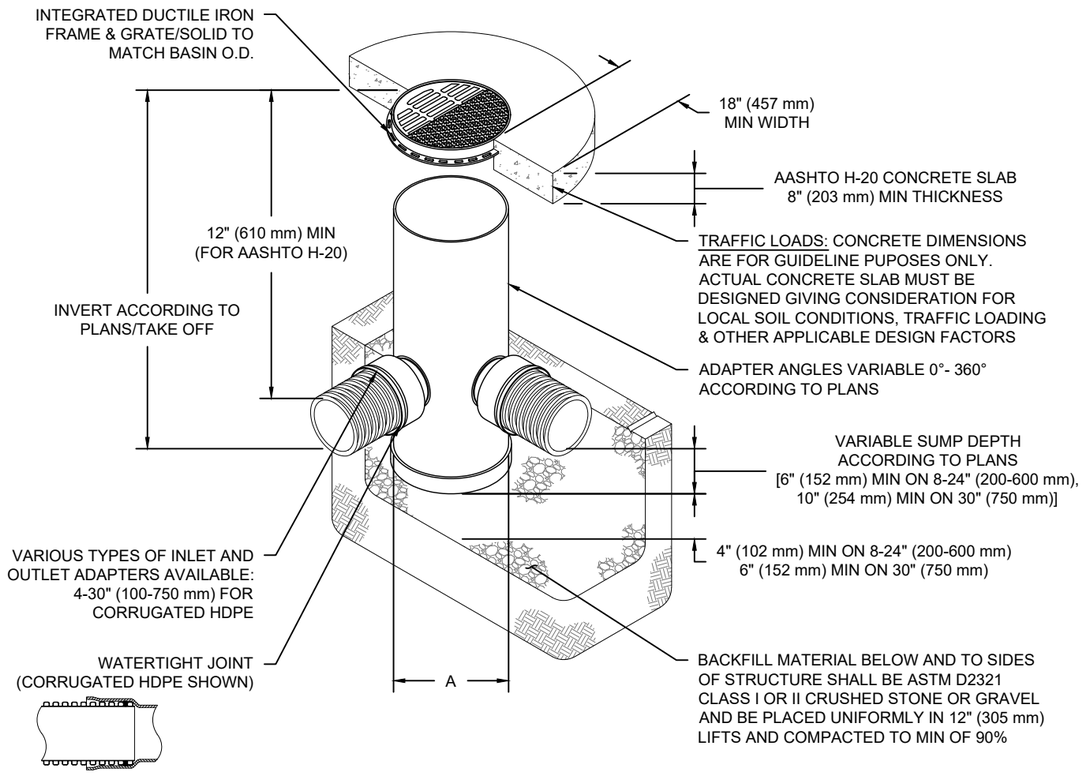
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NYLOPLAST DRAIN BASIN

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NOTES

1. 8-30" (200-750 mm) GRATES/SOLID COVERS SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
2. 12-30" (300-750 mm) FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05
3. DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS
4. DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS & HANCOR DUAL WALL) & SDR 35 PVC
5. FOR COMPLETE DESIGN AND PRODUCT INFORMATION: **WWW.NYLOPLAST-US.COM**
6. TO ORDER CALL: **800-821-6710**

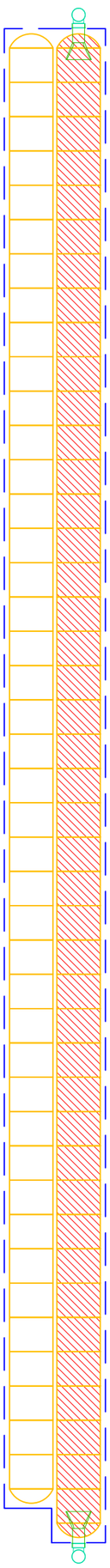
A	PART #	GRATE/SOLID COVER OPTIONS		
8" (200 mm)	2808AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
10" (250 mm)	2810AG	PEDESTRIAN LIGHT DUTY	STANDARD LIGHT DUTY	SOLID LIGHT DUTY
12" (300 mm)	2812AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
15" (375 mm)	2815AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
18" (450 mm)	2818AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
24" (600 mm)	2824AG	PEDESTRIAN AASHTO H-10	STANDARD AASHTO H-20	SOLID AASHTO H-20
30" (750 mm)	2830AG	PEDESTRIAN AASHTO H-20	STANDARD AASHTO H-20	SOLID AASHTO H-20

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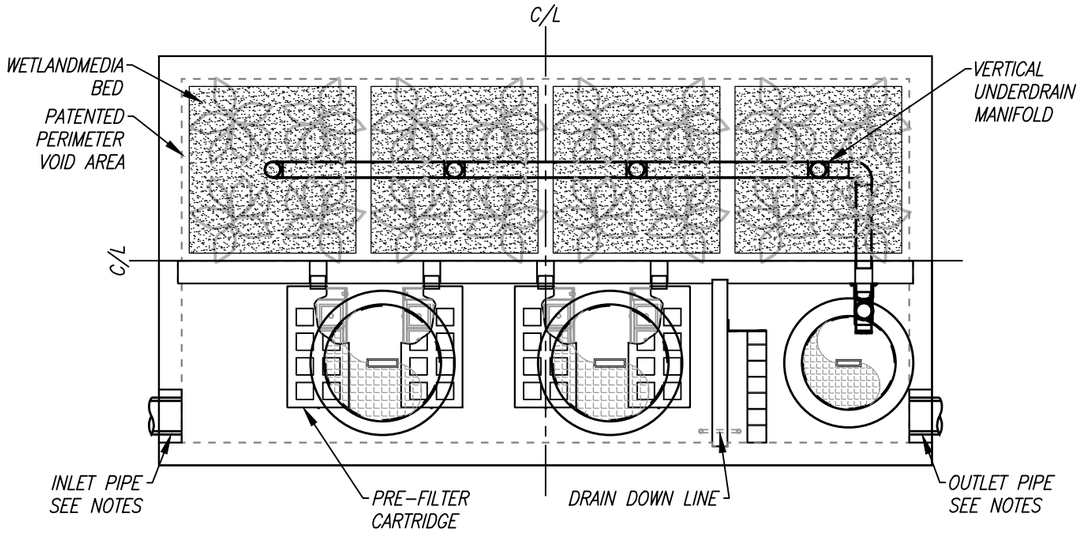
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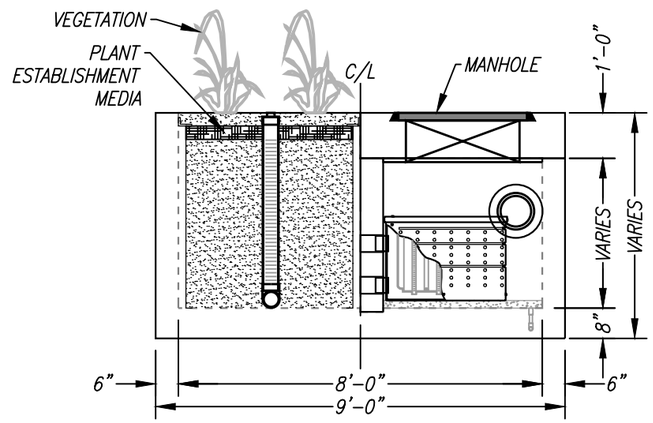


SITE SPECIFIC DATA			
PROJECT NUMBER			
PROJECT NAME			
PROJECT LOCATION			
STRUCTURE ID			
TREATMENT REQUIRED			
VOLUME BASED (CF)		FLOW BASED (CFS)	
20151		N/A	
PEAK BYPASS REQUIRED (CFS) – IF APPLICABLE			OFFLINE
PIPE DATA	I.E.	MATERIAL	DIAMETER
INLET PIPE 1			
INLET PIPE 2	N/A	N/A	N/A
OUTLET PIPE			
	PRETREATMENT	BIOFILTRATION	DISCHARGE
RIM ELEVATION			
SURFACE LOAD	PEDESTRIAN		
FRAME & COVER	2EA ø30"	OPEN PLANTER	ø24"
NOTES:			

* PRELIMINARY NOT FOR CONSTRUCTION



PLAN VIEW



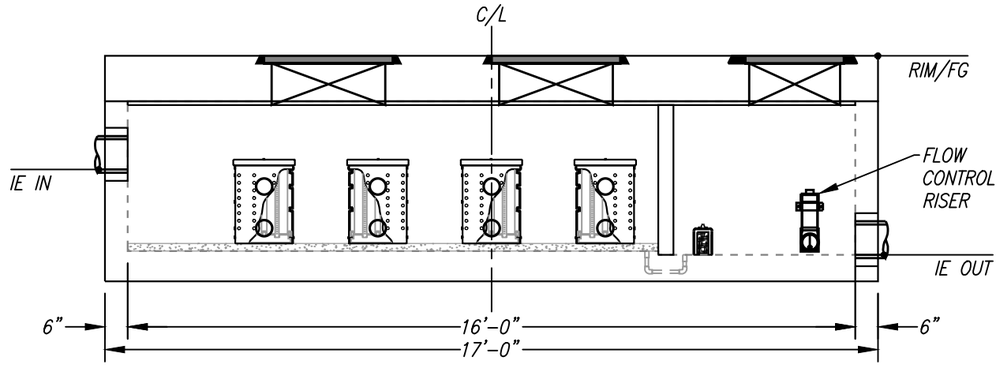
LEFT END VIEW

INSTALLATION NOTES

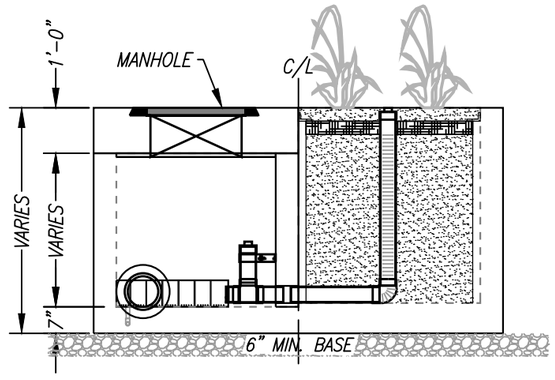
1. CONTRACTOR TO PROVIDE ALL LABOR, EQUIPMENT, MATERIALS AND INCIDENTALS REQUIRED TO OFFLOAD AND INSTALL THE SYSTEM AND APPURTENANCES IN ACCORDANCE WITH THIS DRAWING AND THE MANUFACTURERS SPECIFICATIONS, UNLESS OTHERWISE STATED IN MANUFACTURERS CONTRACT.
2. UNIT MUST BE INSTALLED ON LEVEL BASE. MANUFACTURER RECOMMENDS A MINIMUM 6" LEVEL ROCK BASE UNLESS SPECIFIED BY THE PROJECT ENGINEER. CONTRACTOR IS RESPONSIBLE TO VERIFY PROJECT ENGINEERS RECOMMENDED BASE SPECIFICATIONS.
4. CONTRACTOR TO SUPPLY AND INSTALL ALL EXTERNAL CONNECTING PIPES. ALL PIPES MUST BE FLUSH WITH INSIDE SURFACE OF CONCRETE. (PIPES CANNOT INTRUDE BEYOND FLUSH). INVERT OF OUTFLOW PIPE MUST BE FLUSH WITH DISCHARGE CHAMBER FLOOR. ALL PIPES SHALL BE SEALED WATER TIGHT PER MANUFACTURERS STANDARD CONNECTION DETAIL.
5. CONTRACTOR RESPONSIBLE FOR INSTALLATION OF ALL RISERS, MANHOLES, AND HATCHES. CONTRACTOR TO GROUT ALL MANHOLES AND HATCHES TO MATCH FINISHED SURFACE UNLESS SPECIFIED OTHERWISE.
6. VEGETATION SUPPLIED AND INSTALLED BY OTHERS. ALL UNITS WITH VEGETATION MUST HAVE DRIP OR SPRAY IRRIGATION SUPPLIED AND INSTALLED BY OTHERS.
7. CONTRACTOR RESPONSIBLE FOR CONTACTING BIO CLEAN FOR ACTIVATION OF UNIT. MANUFACTURERS WARRANTY IS VOID WITH OUT PROPER ACTIVATION BY A BIO CLEAN REPRESENTATIVE.

GENERAL NOTES

1. MANUFACTURER TO PROVIDE ALL MATERIALS UNLESS OTHERWISE NOTED.
2. ALL DIMENSIONS, ELEVATIONS, SPECIFICATIONS AND CAPACITIES ARE SUBJECT TO CHANGE. FOR PROJECT SPECIFIC DRAWINGS DETAILING EXACT DIMENSIONS, WEIGHTS AND ACCESSORIES PLEASE CONTACT BIO CLEAN.



ELEVATION VIEW



RIGHT END VIEW

REQUIRED TREATMENT VOLUME (CF)	20151
DRAINDOWN DURATION (HOURS)	48
AVERAGE DISCHARGE RATE PER MWS UNIT(GPM)	26.17
OPERATING HEAD (FT)	3.4
WETLANDMEDIA INFILTRATION RATE (IN/HR)	26
WETLANDMEDIA LOADING RATE (GPM/SF)	0.26

MODULAR WETLANDS

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A Forterra Company

MWS-L-8-16-V
STORMWATER BIOFILTRATION SYSTEM STANDARD DETAIL

5/24/19 10:LEF

Appendix 7: Hydromodification

Supporting Detail Relating to Hydrologic Conditions of Concern

The project will use underground detention chambers to detain runoff and slowly release it via proposed pump & Modular Wetlands System into Wheat Street. The proposed pumping system will be designed to restrict outflows to allowable limits: for HCOC, the 2-year, 24-hour peak flow (proposed) can be up to 110% of the existing condition 2-year, 24-hour peak; to meet the County of Riverside Increased Runoff Criteria, proposed 2-year, 5-year, and 10-year flows for the 1-hour, 3-hour, 6-hour, and 24-hour storms is not to exceed existing peak flows.

Detailed analysis and design will be provided in the final drainage report and WQMP. For preliminary design, the difference in the 10-year, 24-hour storm volumes (existing versus proposed) is generally used to estimate to estimate the expected requirement for detention sizing. For this project, the difference in the 2-year, 24-hour storm volume (existing versus proposed) was larger than the 10-year; therefore, the 2-year storm volume difference was used to preliminarily size the proposed detention system. Refinement of the detention sizing will occur in final design. Design of the proposed pumps will also be part of final design.

Increased Runoff Volume Calculation

	10 year – 24-hour storm			
	Pre-Project	Post-Project	Difference	Volume of proposed chambers
Volume DA 1 (cf)	32,020	49,337	17,317	24,155

HCOC Volume Calculation

	2 year – 24-hour storm			
	Pre-Project	Post-Project	Difference	Volume of proposed chambers
Volume DA 1 (cf)	5,316	29,248	23,932	24,155

Since the site does not infiltrate, outflows are limited to 110% of the 2-year, 24-hour peak flow for the pre-project condition. The following table shows the peak flow limit the project is required to meet in order to comply with HCOC, and the unmitigated peak flow for the post-project condition.

HCOC Flow Calculations

	2-year, 24-hour storm		
	Pre-Project	Allowable Post-Project (110% of Pre-Project) – Pump Limit	Post-Project (unmitigated)
Flow Rate DA 1 (cfs)	0.494	0.543	1.095

Further analysis will be provided in final design, including routing analysis to determine the final detention volume required to mitigate peak flows to meet HCOC and Riverside County Increased Runoff Criteria.

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**

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

To be provided at Final Submittal.

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: **Wheat Street, Menifee Industrial Building**

PROPERTY OWNER NAME: **Mark Bachli**

PROPERTY ADDRESS: **33°44'26.47"N 117°13'14.17"W**

APN: **330-180-012**

THIS AGREEMENT is made and entered into in

_____, California, this 25 day of

March, 2022, by and between

Mark Bachli, 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:

Mark Bachli

CDRE Holdings 18, LLC

523 Main Street

El Segundo, CA 90245

CITY:

By: _____
Armando G. Villa,
City Manager

APPROVED AS TO FORM:

_____
Jeffery T. Melching, City Attorney

ATTEST:

_____
Sarah A. Manwaring, City Clerk

OWNER:

By: Mark Bachli
NAME

Title: _____

OWNER:

By: Mark Bachli
NAME

Title: _____

NOTARY ACKNOWLEDGEMENTS ON FOLLOWING PAGE

EXHIBIT A
(Legal Description)

EXHIBIT B
(Map/Illustration)

Appendix 10: Educational Materials

BMP Fact Sheets, Maintenance Guidelines and Other End-User BMP Information

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.

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?

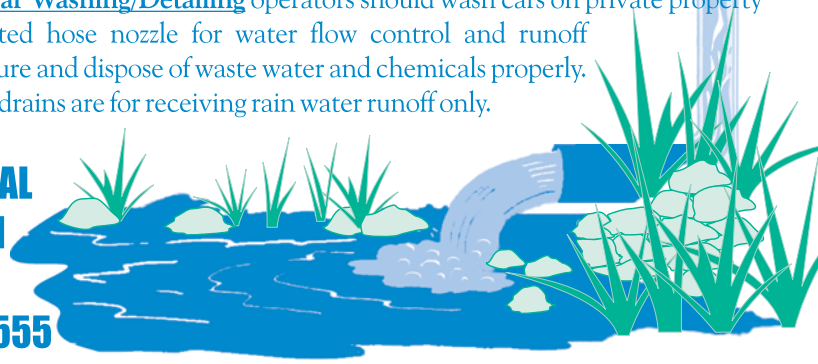
Storm drains are NOT connected to sanitary sewer systems and treatment plants!



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.

After the Storm

A Citizen's Guide to Understanding Stormwater



For more information contact:

or visit
www.epa.gov/npdes/stormwater
www.epa.gov/nps

United States Environmental Protection Agency

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THE YEAR OF CLEAN WATER
Celebration + Recommitment

What is stormwater runoff?



Stormwater runoff occurs when precipitation from rain or snowmelt flows over the ground. Impervious surfaces like driveways, sidewalks, and streets prevent stormwater from naturally soaking into the ground.

Why is stormwater runoff a problem?



Stormwater can pick up debris, chemicals, dirt, and other pollutants and flow into a storm sewer system or directly to a lake, stream, river, wetland, or coastal water. Anything that enters a storm sewer system is discharged untreated into the waterbodies we use for swimming, fishing, and providing drinking water.

The effects of pollution



Polluted stormwater runoff can have many adverse effects on plants, fish, animals, and people.

- Sediment can cloud the water and make it difficult or impossible for aquatic plants to grow. Sediment also can destroy aquatic habitats.
- Excess nutrients can cause algae blooms. When algae die, they sink to the bottom and decompose in a process that removes oxygen from the water. Fish and other aquatic organisms can't exist in water with low dissolved oxygen levels.



- Bacteria and other pathogens can wash into swimming areas and create health hazards, often making beach closures necessary.
- Debris—plastic bags, six-pack rings, bottles, and cigarette butts—washed into waterbodies can choke, suffocate, or disable aquatic life like ducks, fish, turtles, and birds.
- Household hazardous wastes like insecticides, pesticides, paint, solvents, used motor oil, and other auto fluids can poison aquatic life. Land animals and people can become sick or die from eating diseased fish and shellfish or ingesting polluted water.



- Polluted stormwater often affects drinking water sources. This, in turn, can affect human health and increase drinking water treatment costs.

Stormwater Pollution Solutions



Residential

Recycle or properly dispose of household products that contain chemicals, such as insecticides, pesticides, paint, solvents, and used motor oil and other auto fluids. Don't pour them onto the ground or into storm drains.

Lawn care



Excess fertilizers and pesticides applied to lawns and gardens wash off and pollute streams. In addition, yard clippings and leaves can wash into storm drains and contribute nutrients and organic matter to streams.

- Don't overwater your lawn. Consider using a soaker hose instead of a sprinkler.
- Use pesticides and fertilizers sparingly. When use is necessary, use these chemicals in the recommended amounts. Use organic mulch or safer pest control methods whenever possible.
- Compost or mulch yard waste. Don't leave it in the street or sweep it into storm drains or streams.
- Cover piles of dirt or mulch being used in landscaping projects.

Septic systems



Leaking and poorly maintained septic systems release nutrients and pathogens (bacteria and viruses) that can be picked up by stormwater and discharged into nearby waterbodies. Pathogens can cause public health problems and environmental concerns.

- Inspect your system every 3 years and pump your tank as necessary (every 3 to 5 years).
- Don't dispose of household hazardous waste in sinks or toilets.

Auto care



Washing your car and degreasing auto parts at home can send detergents and other contaminants through the storm sewer system. Dumping automotive fluids into storm drains has the same result as dumping the materials directly into a waterbody.

- Use a commercial car wash that treats or recycles its wastewater, or wash your car on your yard so the water infiltrates into the ground.
- Repair leaks and dispose of used auto fluids and batteries at designated drop-off or recycling locations.

Pet waste



Pet waste can be a major source of bacteria and excess nutrients in local waters.

- When walking your pet, remember to pick up the waste and dispose of it properly. Flushing pet waste is the best disposal method. Leaving pet waste on the ground increases public health risks by allowing harmful bacteria and nutrients to wash into the storm drain and eventually into local waterbodies.



Education is essential to changing people's behavior. Signs and markers near storm drains warn residents that pollutants entering the drains will be carried untreated into a local waterbody.

Residential landscaping

Permeable Pavement—Traditional concrete and asphalt don't allow water to soak into the ground. Instead these surfaces rely on storm drains to divert unwanted water. Permeable pavement systems allow rain and snowmelt to soak through, decreasing stormwater runoff.



Rain Barrels—You can collect rainwater from rooftops in mosquito-proof containers. The water can be used later on lawn or garden areas.

Rain Gardens and Grassy Swales—Specially designed areas planted with native plants can provide natural places for rainwater to collect and soak into the ground. Rain from rooftop areas or paved areas can be diverted into these areas rather than into storm drains.



Vegetated Filter Strips—Filter strips are areas of native grass or plants created along roadways or streams. They trap the pollutants stormwater picks up as it flows across driveways and streets.



Commercial

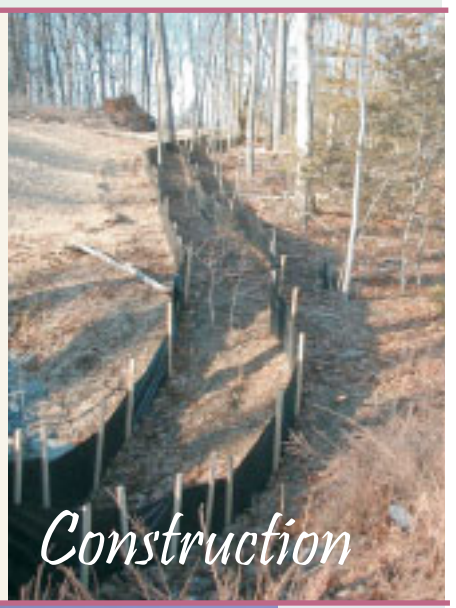
Dirt, oil, and debris that collect in parking lots and paved areas can be washed into the storm sewer system and eventually enter local waterbodies.

- Sweep up litter and debris from sidewalks, driveways and parking lots, especially around storm drains.
- Cover grease storage and dumpsters and keep them clean to avoid leaks.
- Report any chemical spill to the local hazardous waste cleanup team. They'll know the best way to keep spills from harming the environment.

Construction

Erosion controls that aren't maintained can cause excessive amounts of sediment and debris to be carried into the stormwater system. Construction vehicles can leak fuel, oil, and other harmful fluids that can be picked up by stormwater and deposited into local waterbodies.

- Divert stormwater away from disturbed or exposed areas of the construction site.
- Install silt fences, vehicle mud removal areas, vegetative cover, and other sediment and erosion controls and properly maintain them, especially after rainstorms.
- Prevent soil erosion by minimizing disturbed areas during construction projects, and seed and mulch bare areas as soon as possible.





Agriculture

Lack of vegetation on streambanks can lead to erosion. Overgrazed pastures can also contribute excessive amounts of sediment to local waterbodies. Excess fertilizers and pesticides can poison aquatic animals and lead to destructive algae blooms. Livestock in streams can contaminate waterways with bacteria, making them unsafe for human contact.



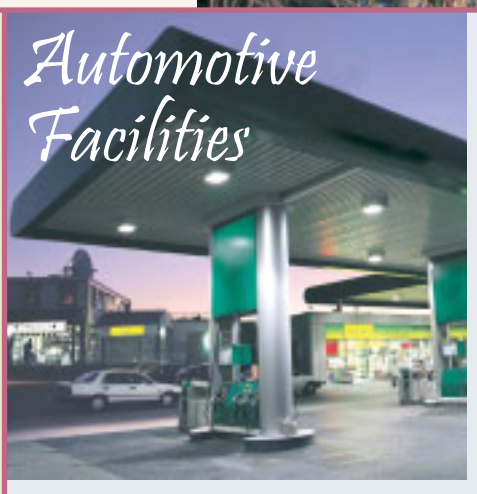
- Keep livestock away from streambanks and provide them a water source away from waterbodies.
- Store and apply manure away from waterbodies and in accordance with a nutrient management plan.
- Vegetate riparian areas along waterways.
- Rotate animal grazing to prevent soil erosion in fields.
- Apply fertilizers and pesticides according to label instructions to save money and minimize pollution.



Forestry

Improperly managed logging operations can result in erosion and sedimentation.

- Conduct preharvest planning to prevent erosion and lower costs.
- Use logging methods and equipment that minimize soil disturbance.
- Plan and design skid trails, yard areas, and truck access roads to minimize stream crossings and avoid disturbing the forest floor.
- Construct stream crossings so that they minimize erosion and physical changes to streams.
- Expedite revegetation of cleared areas.



Automotive Facilities

Uncovered fueling stations allow spills to be washed into storm drains. Cars waiting to be repaired can leak fuel, oil, and other harmful fluids that can be picked up by stormwater.

- Clean up spills immediately and properly dispose of cleanup materials.
- Provide cover over fueling stations and design or retrofit facilities for spill containment.
- Properly maintain fleet vehicles to prevent oil, gas, and other discharges from being washed into local waterbodies.
- Install and maintain oil/water separators.

IRRIGATION RUNOFF

STORMWATER FACT SHEET

Report Irrigation Runoff or Stormwater Pollution:
800.506.2555

RIVERSIDE COUNTY
WATERSHED PROTECTION

OVERWATERING

Overwatering causes irrigation runoff that may contain pollutants such as pesticides, herbicides, fertilizers, pet waste, yard waste, and sediments which can be hazardous to residents and harmful to our environment. Runoff can also serve as a transport mechanism for other pollutants already on the ground or in the curb gutter. Irrigation runoff entering the storm drain system is an illicit discharge.

BEST PRACTICES

Urban runoff begins when yards and landscaped areas are over-irrigated. Irrigation systems require regular maintenance and visual inspection of the system should be performed to prevent over-spray, leaks, and other problems that result in runoff to storm drains, curbs and gutters.

You can **prevent pollution** by conserving water on your property. Water during cooler times of the day (before 10am and after 6pm).

- Adjust sprinklers to stop overspray and runoff.
- Make needed repairs immediately.
- Use drip irrigation, soaker hoses, or micro-spray systems.
- Use an irrigation timer to pre-set watering times.
- Use a control nozzle or similar mechanism when watering by hand.
- Switch to a water-wise landscape - native plants need less fertilizers, herbicides, pesticides and water.







PROTECT OUR WATERSHED

Many people think that when water flows into a storm drain it is treated, but the storm drain system and the sanitary sewer system are not connected. Everything that enters storm drains flows untreated directly into our creeks, rivers, lakes, beaches and ultimately the ocean. Storm water often contains pollutants, including chemicals, trash, and automobile fluids, all of which pollute our watershed and harm fish and wildlife.

Whether at home or work, you can help reduce pollution and improve water quality by using the above Best Management Practices (BMP's) as part of your daily clean up and maintenance routine.

Non-Stormwater Discharges SC-10

Description

Non-stormwater discharges (NSWDs) are flows that do not consist entirely of stormwater. Some non-stormwater discharges do not include pollutants and may be discharged to the storm drain if local regulations allow. These include uncontaminated groundwater and natural springs. There are also some non-stormwater discharges that typically do not contain pollutants and may be discharged to the storm drain with conditions. These include: potable water sources, fire hydrant flushing, air conditioner condensate, landscape irrigation drainage and landscape watering, emergency firefighting, etc. as discussed in Section 2.

However there are certain non-stormwater discharges that pose an environmental concern. These discharges may originate from illegal dumping of industrial material or wastes and illegal connections such as internal floor drains, appliances, industrial processes, sinks, and toilets that are illegally connected to the nearby storm drainage system through on-site drainage and piping. These unauthorized discharges (examples of which may include: process waste waters, cooling waters, wash waters, and sanitary wastewater) can carry substances such as paint, oil, fuel and other automotive fluids, chemicals and other pollutants into storm drains.

Non-stormwater discharges will need to be addressed through a combination of detection and elimination. The ultimate goal is to effectively eliminate unauthorized non-stormwater discharges to the stormwater drainage system through implementation of measures to detect, correct, and enforce against illicit connections and illegal discharges of

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	✓
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

CASQA
CALIFORNIA STORMWATER QUALITY ASSOCIATION®

pollutants on streets and into the storm drain system and downstream water bodies.

Approach

Initially the Discharger must make an assessment of non-stormwater discharges to determine which types must be eliminated or addressed through BMPs. The focus of the following approach is the elimination of unauthorized non-stormwater discharges. See other BMP Fact Sheets for activity-specific pollution prevention procedures.

General Pollution Prevention Protocols

- Implement waste management controls described in SC-34 Waste Handling and Disposal.

- Develop clear protocols and lines of communication for effectively prohibiting non-stormwater discharges, especially those that are not classified as hazardous. These are often not responded to as effectively as they need to be.

- Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled or demarcated next to them to warn against ignorant or unintentional dumping of pollutants into the storm drainage system.

- Manage and control sources of water such as hose bibs, faucets, wash racks, irrigation heads, etc. Identify hoses and faucets in the SWPPP, and post signage for appropriate use.

Non-Stormwater Discharge Investigation Protocols

Identifying the sources of non-stormwater discharges requires the Discharger to conduct an investigation of the facility at regular intervals. There are several categories of non-stormwater discharges:

- Visible, easily identifiable discharges, typically generated as surface runoff, such as uncontained surface runoff from vehicle or equipment washing; and

- Non-visible, (e.g., subsurface) discharges into the site drainage system through a variety of pathways that are not obvious.

The approach to detecting and eliminating non-stormwater discharges will vary considerably, as discussed below:

Visible and identifiable discharges

- Conduct routine inspections of the facilities and of each major activity area and identify visible evidence of unauthorized non-stormwater discharges. This may include:

  - ✓ Visual observations of actual discharges occurring;

- ✓ Evidence of surface staining, discoloring etc. that indicates that discharges have occurred;
- ✓ Pools of water in low lying areas when a rain event has not occurred; and
- ✓ Discussions with operations personnel to understand practices that may lead to unauthorized discharges.

- ☐ If evidence of non-stormwater discharges is discovered:
  - ✓ Document the location and circumstances using Worksheets 5 and 6 (Section 2 of the manual), including digital photos;
  - ✓ Identify and implement any quick remedy or corrective action (e.g., moving uncovered containers inside or to a proper location); and
  - ✓ Develop a plan to eliminate the discharge. Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge.
- ☐ Consult the appropriate activity-specific BMP Fact Sheet for alternative approaches to manage and eliminate the discharge. Make sure the facility SWPPP is up-to-date and includes applicable BMPs to address the non-stormwater discharge.

Other Illegal Discharges (Non visible)

Illicit Connections

- ☐ Locate discharges from the industrial storm drainage system to the municipal storm drain system through review of "as-built" piping schematics.
- ☐ Isolate problem areas and plug illicit discharge points.
- ☐ Locate and evaluate discharges to the storm drain system.
- ☐ Visual Inspection and Inventory:
  - ✓ Inventory and inspect each discharge point during dry weather.
  - ✓ Keep in mind that drainage from a storm event can continue for a day or two following the end of a storm and groundwater may infiltrate the underground stormwater collection system.
  - ✓ Non-stormwater discharges are often intermittent and may require periodic inspections.

Review Infield Piping

- ☐ A review of the "as-built" piping schematic is a way to determine if there are any connections to the stormwater collection system.

- Inspect the path of loading/unloading area drain inlets and floor drains in older buildings.

- Never assume storm drains are connected to the sanitary sewer system.

Monitoring for investigation/detection of illegal discharges

- If a suspected illegal or unknown discharge is detected, monitoring of the discharge may help identify the content and/or suggest the source. This may be done with a field screening analysis, flow meter measurements, or by collecting a sample for laboratory analysis. Section 5 and Appendix D describe the necessary field equipment and procedures for field investigations.

- Investigative monitoring may be conducted over time. For example if, a discharge is intermittent, then monitoring might be conducted to determine the timing of the discharge to determine the source.

- Investigative monitoring may be conducted over a spatial area. For example, if a discharge is observed in a pipe, then monitoring might be conducted at accessible upstream locations in order to pinpoint the source of the discharge.

- Generally, investigative monitoring requiring collection of samples and submittal for lab analysis requires proper planning and specially trained staff.

Smoke Testing

Smoke testing of wastewater and stormwater collection systems is used to detect connections between the two piping systems. Smoke testing is generally performed at a downstream location and the smoke is forced upstream using blowers to create positive pressure. The advantage to smoke testing is that it can potentially identify multiple potential discharge sources at once.

- Smoke testing uses a harmless, non-toxic smoke cartridges developed specifically for this purpose.

- Smoke testing requires specialized equipment (e.g., cartridges, blowers) and is generally only appropriate for specially trained staff.

- A Standard Operating Procedure (SOP) for smoke testing is highly desirable. The SOP should address the following elements:

  - ✓ Proper planning and notification of nearby residents and emergency services is necessary since introducing smoke into the system may result in false alarms;

  - ✓ During dry weather, the stormwater collection system is filled with smoke and then traced back to sources;

- ✓ Temporary isolation of segments of pipe using sand bags is often needed to force the smoke into leaking pipes; and

- ✓ The appearance of smoke in a waste vent pipe, at a sewer manhole, or even the base of a toilet indicates that there may be a connection between the sanitary and storm water systems.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct smoke testing and they should be contacted if cross connections with the sanitary sewer are suspected. See SC-44 Drainage System Maintenance for more information.

Dye Testing

- Dye testing is typically performed when there is a suspected specific pollutant source and location (i.e., leaking sanitary sewer) and there is evidence of dry weather flows in the stormwater collection system.

- Dye is released at a probable upstream source location, either the facility's sanitary or process wastewater system. The dye must be released with a sufficient volume of water to flush the system.

- Operators then visually examine the downstream discharge points from the stormwater collection system for the presence of the dye.

- Dye testing can be performed informally using commercially available products in order to conduct an initial investigation for fairly obvious cross-connections.

- More detailed dye testing should be performed by properly trained staff and follow SOPs. Specialized equipment such as fluorometers may be necessary to detect low concentrations of dye.

- Most municipal wastewater agencies will have necessary staff and equipment to conduct dye testing and they should be contacted if cross connections with the sanitary sewer are suspected.

TV Inspection of Drainage System

- Closed Circuit Television (CCTV) can be employed to visually identify illicit connections to the industrial storm drainage system. Two types of CCTV systems are available: (1) a small specially designed camera that can be manually pushed on a stiff cable through storm drains to observe the interior of the piping, or (2) a larger remote operated video camera on treads or wheels that can be guided through storm drains to view the interior of the pipe.

- CCTV systems often include a high-pressure water jet and camera on a flexible cable. The water jet cleans debris and biofilm off the inside of pipes so the camera can take video images of the pipe condition.

- CCTV units can detect large cracks and other defects such as offsets in pipe ends caused by root intrusions or shifting substrate.
- CCTV can also be used to detect dye introduced into the sanitary sewer.
- CCTV inspections require specialized equipment and properly trained staff and are generally best left to specialized contractors or municipal public works staff.

Illegal Dumping

- Substances illegally dumped on streets and into the storm drain systems and creeks may include paints, used oil and other automotive fluids, construction debris, chemicals, fresh concrete, leaves, grass clippings, and pet wastes. These wastes can cause stormwater and receiving water quality problems as well as clog the storm drain system itself.
- Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills);
  - ✓ An anonymous tip/reporting mechanism; and
  - ✓ Evidence of responsible parties (e.g., tagging, encampments, etc.).
- One of the keys to success of reducing or eliminating illegal dumping is increasing the number of people at the facility who are aware of the problem and who have the tools to at least identify the incident, if not correct it. Therefore, train field staff to recognize and report the incidents.

Once a site has been cleaned:

- Post "No Dumping" signs with a phone number for reporting dumping and disposal.
- Landscaping and beautification efforts of hot spots may also discourage future dumping, as well as provide open space and increase property values.
- Lighting or barriers may also be needed to discourage future dumping.
- See fact sheet SC-11 Spill Prevention, Control, and Cleanup.

Inspection

- Regularly inspect and clean up hot spots and other storm drainage areas where illegal dumping and disposal occurs.
- Conduct field investigations of the industrial storm drain system for potential sources of non-stormwater discharges.
- Pro-actively conduct investigations of high priority areas. Based on historical data, prioritize specific geographic areas and/or incident type for pro-active investigations.



Spill and Leak Prevention and Response

- On paved surfaces, clean up spills with as little water as possible. Use a rag for small spills, a damp mop for general cleanup, and absorbent material for larger spills. If the spilled material is hazardous, then the used cleanup materials are also hazardous and must be sent to a certified laundry (rags) or disposed of as hazardous waste.
- Never hose down or bury dry material spills. Sweep up the material and dispose of properly.
- Use adsorbent materials on small spills rather than hosing down the spill. Remove the adsorbent materials promptly and dispose of properly.
- For larger spills, a private spill cleanup company or Hazmat team may be necessary.
- See SC-11 Spill Prevention Control and Cleanup.



Employee Training Program

- Training of technical staff in identifying and documenting illegal dumping incidents is required. The frequency of training must be presented in the SWPPP, and depends on site-specific industrial materials and activities.
- Consider posting a quick reference table near storm drains to reinforce training.
- Train employees to identify non-stormwater discharges and report discharges to the appropriate departments.
- Educate employees about spill prevention and cleanup.
- Well-trained employees can reduce human errors that lead to accidental releases or spills. The employee should have the tools and knowledge to immediately begin cleaning up a spill should one occur. Employees should be familiar with the Spill Prevention Control and Countermeasure Plan. Employees should be able to identify work/jobs with high potential for spills and suggest methods to reduce possibility.
- Determine and implement appropriate outreach efforts to reduce non-permissible non-stormwater discharges.

- Conduct spill response drills annually (if no events occurred) in order to evaluate the effectiveness of the plan.
- When a responsible party is identified, educate the party on the impacts of his or her actions.



Quality Assurance and Record Keeping

Performance Evaluation

- Annually review internal investigation results; assess whether goals were met and what changes or improvements are necessary.
- Obtain feedback from personnel assigned to respond to, or inspect for, illicit connections and illegal dumping incidents.
- Develop document and data management procedures.
- A database is useful for defining and tracking the magnitude and location of the problem.
- Report prohibited non-stormwater discharges observed during the course of normal daily activities so they can be investigated, contained, and cleaned up or eliminated.
- Document that non-stormwater discharges have been eliminated by recording tests performed, methods used, dates of testing, and any on-site drainage points observed.
- Annually document and report the results of the program.
- Maintain documentation of illicit connection and illegal dumping incidents, including significant conditionally exempt discharges that are not properly managed.
- Document training activities.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Many facilities do not have accurate, up-to-date 'as-built' plans or drawings which may be necessary in order to conduct non-stormwater discharge assessments.
  - ✓ Online tools such as Google Earth™ can provide an aerial view of the facility and may be useful in understanding drainage patterns and potential sources of non-stormwater discharges
  - ✓ Local municipal jurisdictions may have useful drainage systems maps.

- Video surveillance cameras are commonly used to secure the perimeter of industrial facilities against break-ins and theft. These surveillance systems may also be useful for capturing illegal dumping activities. Minor, temporary adjustments to the field of view of existing surveillance camera systems to target known or suspected problem areas may be a cost-effective way of capturing illegal dumping activities and identifying the perpetrators.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital facility cost requirements may be minimal unless cross-connections to storm drains are detected.
- Indoor floor drains may require re-plumbing if cross-connections are detected.
- Leaky sanitary sewers will require repair or replacement which can have significant costs depending on the size and industrial activity at the facility.

Maintenance (including administrative and staffing)

- The primary effort is for staff time and depends on how aggressively a program is implemented.
- Costs for containment, and disposal of any leak or discharge is borne by the Discharger.
- Illicit connections can be difficult to locate especially if there is groundwater infiltration.
- Illegal dumping and illicit connection violations requires technical staff to detect and investigate them.

Supplemental Information

Permit Requirements

The IGP authorizes certain Non-Storm Water Discharges (NSWDs) provided BMPs are included in the SWPPP and implemented to:

- Reduce or prevent the contact of authorized NSWDs with materials or equipment that are potential sources of pollutants;
- Reduce, to the extent practicable, the flow or volume of authorized NSWDs;
- Ensure that authorized NSWDs do not contain quantities of pollutants that cause or contribute to an exceedance of a water quality standards (WQS); and,

- Reduce or prevent discharges of pollutants in authorized NSWDs in a manner that reflects best industry practice considering technological availability and economic practicability and achievability."

References and Resources

Center for Watershed Protection, 2004. *Illicit Discharge Detection and Elimination: A Guidance Manual for Program Development and Technical Assessments*, EPA Cooperative Agreement X-82907801-0.

Dublin San Ramon Sanitation District. http://www.dsrsd.com/wwrw/smoketest.html.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*, Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp.org.

Southern California Coastal Water Research Project, 2013. *The California Microbial Source Identification Manual: A Tiered Approach to Identifying Fecal Pollution Sources to Beaches,* Technical Report 804.

The Storm Water Managers Resource Center, http://www.stormwatercenter.net/.

US EPA. National Pollutant Discharge Elimination System. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=factsheet_results&view=specific&bmp=111.

WEF Press Alexandria, Virginia, 2009.Existing Sewer Evaluation and Rehabilitation: *WEF Manual of Practice No. FD-6 ASCE/EWRI Manuals and Reports on Engineering Practice No. 62, Third Edition.*

Outdoor Loading/Unloading SC-30

Description

The loading/unloading of materials usually takes place outside on docks or terminals; therefore, materials spilled, leaked, or lost during loading/unloading may collect in the soil or on other surfaces and have the potential to be carried away by wind, stormwater runoff or when the area is cleaned. Additionally, rainfall may wash pollutants from machinery used to unload or move materials. Implementation of the following protocols will prevent or reduce the discharge of pollutants to stormwater from outdoor loading/unloading of materials.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- Park tank trucks or delivery vehicles in designated areas so that spills or leaks can be contained.
- Limit exposure of material to rainfall whenever possible.
- Prevent stormwater run-on.
- Check equipment regularly for leaks.



Good Housekeeping

- Develop an operations plan that describes procedures for loading and/or unloading.
- Conduct loading and unloading in dry weather if possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	
Metals	✓
Bacteria	
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Cover designated loading/unloading areas to reduce exposure of materials to rain.
- Consider placing a seal or door skirt between delivery vehicles and building to prevent exposure to rain.
- Design loading/unloading area to prevent stormwater run-on, which would include grading or berming the area, and position roof downspouts so they direct stormwater away from the loading/unloading areas.
- Have employees load and unload all materials and equipment in covered areas such as building overhangs at loading docks if feasible.
- Load/unload only at designated loading areas.
- Use drip pans underneath hose and pipe connections and other leak-prone spots during liquid transfer operations, and when making and breaking connections. Several drip pans should be stored in a covered location near the liquid transfer area so that they are always available, yet protected from precipitation when not in use. Drip pans can be made specifically for railroad tracks. Drip pans must be cleaned periodically, and drip collected materials must be disposed of properly.
- Pave loading areas with concrete instead of asphalt.
- Avoid placing storm drains inlets in the area.
- Grade and/or berm the loading/unloading area with drainage to sump; regularly remove materials accumulated in sump.



Spill Response and Prevention Procedures

- Keep your spill prevention and control plan up-to-date or have an emergency spill cleanup plan readily available, as applicable.
- Contain leaks during transfer.
- Store and maintain appropriate spill cleanup materials in a location that is readily accessible and known to all employees.
- Ensure that employees are familiar with the site's spill control plan and proper spill cleanup procedures.
- Use drip pans or comparable devices when transferring oils, solvents, and paints.



Material Handling and Waste Management

- Spot clean leaks and drips routinely to prevent runoff of spillage.
- Do not pour liquid wastes into floor drains, sinks, outdoor storm drain inlets, or other storm drains or sewer connections.

- Do not put used or leftover cleaning solutions, solvents, and automotive fluids in the storm drain or sanitary sewer.
- Collect leaking or dripping fluids in drip pans or containers. Fluids are easier to recycle if kept separate.
- Promptly transfer used fluids to the proper waste or recycling drums. Do not leave drip pans or other open containers lying around.
- Minimize the possibility of stormwater pollution from outside waste receptacles by doing at least one of the following:
  - ✓ Use only watertight waste receptacle(s) and keep the lid(s) closed.
  - ✓ Grade and pave the waste receptacle area to prevent run-on of stormwater.
  - ✓ Install a roof over the waste receptacle area.
  - ✓ Install a low containment berm around the waste receptacle area.
  - ✓ Use and maintain drip pans under waste receptacles.
- Post "no littering" signs.
- Perform work area clean-up and dry sweep after daily operations.



Employee Training Program

- Train employees (e.g., fork lift operators) and contractors on proper spill containment and cleanup.
- Have employees trained in spill containment and cleanup present during loading/unloading.
- Train employees in proper handling techniques during liquid transfers to avoid spills.
- Make sure forklift operators are properly trained on loading and unloading procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document activities performed, quantities of materials removed, and improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Establish procedures to complete logs and file them in the central office.
- Keep accurate logs of daily clean-up operations.

Potential Limitations and Work-Arounds

Some facilities may have space constraints, limited staffing and time limitations that may preclude implementation of BMPs. Provided below are typical limitations and recommended "work-arounds."

- Space and time limitations may preclude all transfers from being performed indoors or under cover.
  - ✓ Designate specific areas for outdoor loading and unloading.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.
- It may not be possible to conduct transfers only during dry weather.
  - ✓ Limit materials and equipment rainfall exposure to all extents practicable.
  - ✓ Require employees to understand and follow spill and leak prevention BMPs.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

Many facilities will already have indoor or covered areas where loading/unloading takes place and will require no additional capital expenditures.

If outdoor activities are required, construction of berms or other means to retain spills and leaks may require appropriate constructed systems for containment. These containment areas may require significant new capital investment.

Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

Most of the operations and maintenance activities associated with implementing this BMP are integrally linked to routine operations as previously described. Therefore additional O&M is not required.

- Conduct regular inspections and make repairs and improvements as necessary.
- Check loading and unloading equipment regularly for leaks.
- Conduct regular broom dry-sweeping of area. Do not wash with water.

Supplemental Information

Loading and Unloading of Liquids

- Loading or unloading of liquids should occur in the manufacturing building so that any spills that are not completely retained can be discharged to the sanitary sewer,

treatment plant, or treated in a manner consistent with local sewer authorities and permit requirements.

- For loading and unloading tank trucks to above and below ground storage tanks, the following procedures should be used:
  - ✓ The area where the transfer takes place should be paved. If the liquid is reactive with the asphalt, Portland cement should be used to pave the area.
  - ✓ The transfer area should be designed to prevent run-on of stormwater from adjacent areas. Sloping the pad and using a curb, like a speed bump, around the uphill side of the transfer area should reduce run-on.
  - ✓ The transfer area should be designed to prevent runoff of spilled liquids from the area. Sloping the area to a drain should prevent runoff. The drain should be connected to a dead-end sump or to the sanitary sewer. A positive control valve should be installed on the drain.
- For transfer from rail cars to storage tanks that must occur outside, use the following procedures:
  - ✓ Drip pans should be placed at locations where spillage may occur, such as hose connections, hose reels, and filler nozzles. Use drip pans when making and breaking connections.
  - ✓ Drip pan systems should be installed between the rails to collect spillage from tank cars.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315*. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities.

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program, *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: *Best Management Practices*. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/.

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Waste Handling & Disposal SC-34

Description

Improper storage and handling of solid wastes can allow toxic compounds, oils and greases, heavy metals, nutrients, suspended solids, and other pollutants to enter stormwater runoff. The discharge of pollutants to stormwater from waste handling and disposal can be prevented and reduced by tracking waste generation, storage, and disposal; reducing waste generation and disposal through source reduction, reuse, and recycling; and preventing run-on and runoff.

Approach

Reduce potential for pollutant discharge through source control pollution prevention and BMP implementation. Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Accomplish reduction in the amount of waste generated using the following source controls:
  - ✓ Production planning and sequencing;
  - ✓ Process or equipment modification;
  - ✓ Raw material substitution or elimination;
  - ✓ Loss prevention and housekeeping;
  - ✓ Waste segregation and separation; and
  - ✓ Close loop recycling.
- ☐ Establish a material tracking system to increase awareness about material usage. This may reduce spills and minimize contamination, thus reducing the amount of waste produced.
- ☐ Recycle materials whenever possible.

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*
■ *Product Substitution*

Targeted Constituents	
Sediment	
Nutrients	
Trash	
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	✓
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- Use the entire product before disposing of the container.
- To the extent possible, store wastes under cover or indoors after ensuring all safety concerns such as fire hazard and ventilation are addressed.
- Provide containers for each waste stream at each work station. Allow time after shift to clean area.



Good Housekeeping

- Cover storage containers with leak proof lids or some other means. If waste is not in containers, cover all waste piles (plastic tarps are acceptable coverage) and prevent stormwater run-on and runoff with a berm. The waste containers or piles must be covered except when in use.
- Use drip pans or absorbent materials whenever grease containers are emptied by vacuum trucks or other means. Grease cannot be left on the ground. Collected grease must be properly disposed of as garbage.
- Dispose of rinse and wash water from cleaning waste containers into a sanitary sewer if allowed by the local sewer authority. Do not discharge wash water to the street or storm drain. Clean in a designated wash area that drains to a clarifier.
- Transfer waste from damaged containers into safe containers.
- Take special care when loading or unloading wastes to minimize losses. Loading systems can be used to minimize spills and fugitive emission losses such as dust or mist. Vacuum transfer systems can minimize waste loss.
- Keep the waste management area clean at all times by sweeping and cleaning up spills immediately.
- Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Stencil or demarcate storm drains on the facility's property with prohibitive message regarding waste disposal.
- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- If possible, move the activity indoor after ensuring all safety concerns such as fire hazard and ventilation are addressed.



Preventative Maintenance

- Prevent stormwater run-on from entering the waste management area by enclosing the area or building a berm around the area.
- Prevent waste materials from directly contacting rain.

- Cover waste piles with temporary covering material such as reinforced tarpaulin, polyethylene, polyurethane, polypropylene or hypalon.
- Cover the area with a permanent roof if feasible.
- Cover dumpsters to prevent rain from washing waste out of holes or cracks in the bottom of the dumpster.
- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, vacuuming, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.



Spill Response and Prevention Procedures

- Keep your spill prevention and plan up-to-date.
- Have an emergency plan, equipment and trained personnel ready at all times to deal immediately with major spills.
- Collect all spilled liquids and properly dispose of them.
- Store and maintain appropriate spill cleanup materials in a location known to all near the designated wash area.
- Ensure that vehicles transporting waste have spill prevention equipment that can prevent spills during transport. Spill prevention equipment includes:
  - ✓ Vehicles equipped with baffles for liquid waste; and
  - ✓ Trucks with sealed gates and spill guards for solid waste.



Material Handling and Waste Management

Litter Control

- Post “No Littering” signs and enforce anti-litter laws.
- Provide a sufficient number of litter receptacles for the facility.
- Clean out and cover litter receptacles frequently to prevent spillage.

Waste Collection

- Keep waste collection areas clean.

- Inspect solid waste containers for structural damage regularly. Repair or replace damaged containers as necessary.
- Secure solid waste containers; containers must be closed tightly when not in use.
- Do not fill waste containers with washout water or any other liquid.
- Ensure that only appropriate solid wastes are added to the solid waste container. Certain wastes such as hazardous wastes, appliances, fluorescent lamps, pesticides, etc., may not be disposed of in solid waste containers (see chemical/ hazardous waste collection section below).
- Do not mix wastes; this can cause chemical reactions, make recycling impossible, and complicate disposal. Affix labels to all waste containers.

Chemical/Hazardous Wastes

- Select designated hazardous waste collection areas on-site.
- Store hazardous materials and wastes in covered containers and protect them from vandalism.
- Place hazardous waste containers in secondary containment.
- Make sure that hazardous waste is collected, removed, and disposed of only at authorized disposal areas.
- Hazardous waste cannot be reused or recycled; it must be disposed of by a licensed hazardous waste hauler.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for waste handling and disposal, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.

- Establish procedures to complete logs and file them in the central office.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and the types of waste handled. Significant capital costs may be associated with reducing wastes by modifying processes or implementing closed-loop recycling.
- Many facilities will already have indoor covered areas where waste materials will be stored and will require no additional capital expenditures for providing cover.
- If outdoor storage of wastes is required, construction of berms or other means to prevent stormwater run-on and runoff may require appropriate constructed systems for containment.
- Capital investments will likely be required at some sites if adequate cover and containment facilities do not exist and can vary significantly depending upon site conditions.

Maintenance

- Check waste containers weekly for leaks and to ensure that lids are on tightly. Replace any that are leaking, corroded, or otherwise deteriorating.
- Sweep and clean the waste management area regularly. Use dry methods when possible (e.g., sweeping, use of absorbents) when cleaning around restaurant/food handling dumpster areas. If water must be used after sweeping/using absorbents, collect water and discharge through grease interceptor to the sewer.
- Inspect and replace faulty pumps or hoses regularly to minimize the potential of releases and spills.
- Repair leaking equipment including valves, lines, seals, or pumps promptly.

References and Resources

Minnesota Pollution Control Agency, *Industrial Stormwater Best Management Practices Guidebook*. Available online at: http://www.pca.state.mn.us/index.php/view-document.html?gid=10557.

New Jersey Department of Environmental Protection, 2013. *Basic Industrial Stormwater General Permit Guidance Document NJPDES General Permit No NJ0088315,* Revised. Available online at: http://www.nj.gov/dep/dwq/pdf/5G2_guidance_color.pdf.

Orange County Stormwater Program, Best Management Practices for Industrial/Commercial Business Activities. Available online at: http://ocwatersheds.com/documents/bmp/industrialcommercialbusinessesactivities

Oregon Department of Environmental Quality, 2013. *Industrial Stormwater Best Management Practices Manual- BMP 26 Fueling and Liquid Loading/Unloading Operations*. Available online at: http://www.deq.state.or.us/wq/wqpermit/docs/IndBMP021413.pdf.

Sacramento Stormwater Management Program. *Best Management Practices for Industrial Storm Water Pollution Control*. Available online at: http://www.msa.saccounty.net/sactostormwater/documents/guides/industrial-BMP-manual.pdf.

Sacramento County Environmental Management Stormwater Program: Best Management Practices. Available online at: http://www.emd.saccounty.net/EnvHealth/Stormwater/Stormwater-BMPs.html.

Santa Clara Valley Urban Runoff Pollution Prevention Program. http://www.scvurppp-w2k.com/

US EPA. National Pollutant Discharge Elimination System – Industrial Fact Sheet Series for Activities Covered by EPA's Multi Sector General Permit. Available online at: http://cfpub.epa.gov/npdes/stormwater/swsectors.cfm.

Drainage System Maintenance SC-44

Description

As a consequence of its function, the stormwater drainage facilities on site convey stormwater that may contain certain pollutants either to the offsite conveyance system that collects and transports urban runoff and stormwater, or directly to receiving waters. The protocols in this fact sheet are intended to reduce pollutants leaving the site to the offsite drainage infrastructure or to receiving waters through proper on-site conveyance system operation and maintenance. The targeted constituents will vary depending on site characteristics and operations.

Approach

Successful implementation depends on effective training of employees on applicable BMPs and general pollution prevention strategies and objectives.

General Pollution Prevention Protocols

- ☐ Maintain catch basins, stormwater inlets, and other stormwater conveyance structures on a regular basis to remove pollutants, reduce high pollutant concentrations during the first flush of storms, prevent clogging of the downstream conveyance system, restore catch basins' sediment trapping capacity, and ensure the system functions properly hydraulically to avoid flooding.
- ☐ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.



Good Housekeeping

Illicit Connections and Discharges

- ☐ Look for evidence of illegal discharges or illicit connections during routine maintenance of conveyance system and drainage structures:

Objectives
■ *Cover*
■ *Contain*
■ *Educate*
■ *Reduce/Minimize*

Targeted Constituents	
Sediment	✓
Nutrients	✓
Trash	✓
Metals	✓
Bacteria	✓
Oil and Grease	✓
Organics	✓

Minimum BMPs Covered	
Good Housekeeping	✓
Preventative Maintenance	✓
Spill and Leak Prevention and Response	✓
Material Handling & Waste Management	
Erosion and Sediment Controls	
Employee Training Program	✓
Quality Assurance Record Keeping	✓

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- ✓ Identify evidence of spills such as paints, discoloring, odors, etc.
- ✓ Record locations of apparent illegal discharges/illicit connections.
- ✓ Track flows back to potential discharges and conduct aboveground inspections. This can be done through visual inspection of upgradient manholes or alternate techniques including zinc chloride smoke testing, fluorometric dye testing, physical inspection testing, or television camera inspection.
- ✓ Eliminate the discharge once the origin of flow is established.

- □ Stencil or demarcate storm drains, where applicable, to prevent illegal disposal of pollutants. Storm drain inlets should have messages such as "Dump No Waste Drains to Stream" or similar stenciled next to them to warn against ignorant or intentional dumping of pollutants into the storm drainage system.
- □ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.

Illegal Dumping

- □ Inspect and clean up hot spots and other storm drainage areas regularly where illegal dumping and disposal occurs.
- □ Establish a system for tracking incidents. The system should be designed to identify the following:
  - ✓ Illegal dumping hot spots;
  - ✓ Types and quantities (in some cases) of wastes;
  - ✓ Patterns in time of occurrence (time of day/night, month, or year);
  - ✓ Mode of dumping (abandoned containers, "midnight dumping" from moving vehicles, direct dumping of materials, accidents/spills); and
  - ✓ Responsible parties.
- □ Post "No Dumping" signs in problem areas with a phone number for reporting dumping and disposal. Signs should also indicate fines and penalties for illegal dumping.
- □ Refer to fact sheet SC-10 Non-Stormwater Discharges for additional information.



Preventative Maintenance

Catch Basins/Inlet Structures

- □ Staff should regularly inspect facilities to ensure compliance with the following:
  - ✓ Immediate repair of any deterioration threatening structural integrity.
  - ✓ Cleaning before the sump is 40% full. Catch basins should be cleaned as frequently as needed to meet this standard.

- Clean catch basins, storm drain inlets, and other conveyance structures before the wet season to remove sediments and debris accumulated during the summer.
- Conduct inspections more frequently during the wet season for problem areas where sediment or trash accumulates more often. Prioritize storm drain inlets; clean and repair as needed.
- Keep accurate logs of the number of catch basins cleaned.
- Store wastes collected from cleaning activities of the drainage system in appropriate containers or temporary storage sites in a manner that prevents discharge to the storm drain.
- Dewater the wastes if necessary with outflow into the sanitary sewer if permitted. Water should be treated with an appropriate filtering device prior to discharge to the sanitary sewer. If discharge to the sanitary sewer is not allowed, water should be pumped or vacuumed to a tank and properly disposed. Do not dewater near a storm drain or stream.

Storm Drain Conveyance System

- Locate reaches of storm drain with deposit problems and develop a flushing schedule that keeps the pipe clear of excessive buildup.
- Collect and pump flushed effluent to the sanitary sewer for treatment whenever possible.

Pump Stations

- Clean all storm drain pump stations prior to the wet season to remove silt and trash.
- Do not allow discharge to reach the storm drain system when cleaning a storm drain pump station or other facility.
- Conduct routine maintenance at each pump station.
- Inspect, clean, and repair as necessary all outlet structures prior to the wet season.

Open Channel

- Modify storm channel characteristics to improve channel hydraulics, increase pollutant removals, and enhance channel/creek aesthetic and habitat value.
- Conduct channel modification/improvement in accordance with existing laws. Any person, government agency, or public utility proposing an activity that will change the natural state of any river, stream, or lake in California, must enter into a Steam or Lake Alteration Agreement with the Department of Fish and Wildlife. The developer-applicant should also contact local governments (city, county, special districts), other state agencies (SWRCB, RWQCB, Department of Forestry, Department of Water Resources), and Army Corps of Engineers and USFWS.



Spill Response and Prevention Procedures

- Keep your spill prevention control plan up-to-date.

- Investigate all reports of spills, leaks, and/or illegal dumping promptly.
- Place a stockpile of spill cleanup materials where it will be readily accessible or at a central location.
- Clean up all spills and leaks using "dry" methods (with absorbent materials and/or rags) or dig up, remove, and properly dispose of contaminated soil.



Employee Training Program

- Educate employees about pollution prevention measures and goals.
- Train employees how to properly handle and dispose of waste using the source control BMPs described above.
- Train employees and subcontractors in proper hazardous waste management.
- Use a training log or similar method to document training.
- Ensure that employees are familiar with the site's spill control plan and/or proper spill cleanup procedures.
- Have staff involved in detection and removal of illicit connections trained in the following:
  - ✓ OSHA-required Health and Safety Training (29 CFR 1910.120) plus annual refresher training (as needed).
  - ✓ OSHA Confined Space Entry training (Cal-OSHA Confined Space, Title 8 and Federal OSHA 29 CFR 1910.146).
  - ✓ Procedural training (field screening, sampling, smoke/dye testing, TV inspection).



Quality Assurance and Record Keeping

- Keep accurate maintenance logs that document minimum BMP activities performed for drainage system maintenance, types and quantities of waste disposed of, and any improvement actions.
- Keep accurate logs of spill response actions that document what was spilled, how it was cleaned up, and how the waste was disposed.
- Keep accurate logs of illicit connections, illicit discharges, and illegal dumping into the storm drain system including how wastes were cleaned up and disposed.
- Establish procedures to complete logs and file them in the central office.

Potential Limitations and Work-Arounds

Provided below are typical limitations and recommended "work-arounds" for drainage system maintenance:

- Clean-up activities may create a slight disturbance for local aquatic species. Access to items and material on private property may be limited. Trade-offs may exist between channel hydraulics and water quality/riparian habitat. If storm channels or basins are recognized as wetlands, many activities, including maintenance, may be subject to regulation and permitting.

  - ✓ Perform all maintenance onsite and do not flush accumulated material downstream to private property or riparian habitats.

- Storm drain flushing is most effective in small diameter pipes (36-inch diameter pipe or less, depending on water supply and sediment collection capacity). Other considerations associated with storm drain flushing may include the availability of a water source, finding a downstream area to collect sediments, and liquid/sediment disposal.

  - ✓ Develop and follow a site specific drainage system maintenance plan that describes maintenance locations, methods, required equipment, water sources, sediment collection areas, disposal requirements, and any other pertinent information.

- Regulations may include adoption of substantial penalties for illegal dumping and disposal.

  - ✓ Do not dump illegal materials anywhere onsite.

  - ✓ Identify illicit connections, illicit discharge, and illegal dumping.

  - ✓ Cleanup spills immediately and properly dispose of wastes.

- Local municipal codes may include sections prohibiting discharge of soil, debris, refuse, hazardous wastes, and other pollutants into the sanitary sewer system.

  - ✓ Collect all materials and pollutants accumulated in drainage system and dispose of according to local regulations.

  - ✓ Install debris excluders in areas with a trash TMDL.

Potential Capital Facility Costs and Operation & Maintenance Requirements

Facilities

- Capital costs will vary substantially depending on the size of the facility and characteristics of the drainage system. Significant capital costs may be associated with purchasing water trucks, vacuum trucks, and any other necessary cleaning equipment or improving the drainage infrastructure to reduce the potential .

- Developing and implementing a site specific drainage system maintenance plan will require additional capital if a similar program is not already in place.

Maintenance

- Two-person teams may be required to clean catch basins with vactor trucks.
- Teams of at least two people plus administrative personnel are required to identify illicit discharges, depending on the complexity of the storm sewer system.
- Arrangements must be made for proper disposal of collected wastes.
- Technical staff are required to detect and investigate illegal dumping violations.
- Methods used for illicit connection detection (smoke testing, dye testing, visual inspection, and flow monitoring) can be costly and time-consuming. Site-specific factors, such as the level of impervious area, the density and ages of buildings, and type of land use will determine the level of investigation necessary.

Supplemental Information

Storm Drain Flushing

Flushing is a common maintenance activity used to improve pipe hydraulics and to remove pollutants in storm drainage systems. Flushing may be designed to hydraulically convey accumulated material to strategic locations, such as an open channel, another point where flushing will be initiated, or the sanitary sewer and the treatment facilities, thus preventing re-suspension and overflow of a portion of the solids during storm events. Flushing prevents "plug flow" discharges of concentrated pollutant loadings and sediments. Deposits can hinder the designed conveyance capacity of the storm drain system and potentially cause backwater conditions in severe cases of clogging.

Storm drain flushing usually takes place along segments of pipe with grades that are too flat to maintain adequate velocity to keep particles in suspension. An upstream manhole is selected to place an inflatable device that temporarily plugs the pipe. Further upstream, water is pumped into the line to create a flushing wave. When the upstream reach of pipe is sufficiently full to cause a flushing wave, the inflated device is rapidly deflated with the assistance of a vacuum pump, thereby releasing the backed up water and resulting in the cleaning of the storm drain segment.

To further reduce impacts of stormwater pollution, a second inflatable device placed well downstream may be used to recollect the water after the force of the flushing wave has dissipated. A pump may then be used to transfer the water and accumulated material to the sanitary sewer for treatment. In some cases, an interceptor structure may be more practical or required to recollect the flushed waters.

It has been found that cleansing efficiency of periodic flush waves is dependent upon flush volume, flush discharge rate, sewer slope, sewer length, sewer flow rate, sewer diameter, and population density. As a rule of thumb, the length of line to be flushed should not exceed 700 feet. At this maximum recommended length, the percent removal efficiency ranges between 65-75% for organics and 55-65% for dry weather grit/inorganic material. The percent removal efficiency drops rapidly beyond that. Water is commonly supplied by a water truck, but fire hydrants can also supply water. To make the best use of water, it is recommended that reclaimed water be used if allowed or that fire hydrant line flushing coincide with storm sewer flushing.

References and Resources

City of Seattle, Seattle Public Utilities Department of Planning and Development, 2009. *Stormwater Manual Vol. 1 Source Control Technical Requirements Manual*.

Knox County Tennessee *Stormwater Management Manual* Chapter 5 Drainage System Maintenance, 2008. Available online at: http://www.knoxcounty.org/stormwater/manual/Volume%201/knoxco_swmm_v1_chap5_jan2008.pdf.

US EPA. Storm Drain System Cleaning, 2012. Available online at: http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=102.

Plaza and Sidewalk Cleaning SC-71



Objectives

- Cover
- Contain
- Educate
- Reduce/Minimize
- Product Substitution

Targeted Constituents

Sediment	☑
Nutrients	☑
Trash	☑
Metals	☑
Bacteria	☑
Oil and Grease	☑
Organics	☑
Oxygen Demanding	☑

Description

Pollutants on sidewalks and other pedestrian traffic areas and plazas are typically due to littering and vehicle use. This fact sheet describes good housekeeping practices that can be incorporated into the municipality's existing cleaning and maintenance program.

Approach

Pollution Prevention

- Use dry cleaning methods whenever practical for surface cleaning activities.
- Use the least toxic materials available (e.g. water based paints, gels or sprays for graffiti removal).

Suggested Protocols

Surface Cleaning

- Regularly broom (dry) sweep sidewalk, plaza and parking lot areas to minimize cleaning with water.
- Dry cleanup first (sweep, collect, and dispose of debris and trash) when cleaning sidewalks or plazas, then wash with or without soap.
- Block the storm drain or contain runoff when cleaning with water. Discharge wash water to landscaping or collect water and pump to a tank or discharge to sanitary sewer if allowed. (Permission may be required from local sanitation district.)

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- Block the storm drain or contain runoff when washing parking areas, driveways or drive-throughs. Use absorbents to pick up oil; then dry sweep. Clean with or without soap. Collect water and pump to a tank or discharge to sanitary sewer if allowed. Street Repair and Maintenance.

Graffiti Removal

- Avoid graffiti abatement activities during rain events.
- Implement the procedures under Painting and Paint Removal in SC-70 Roads, Streets, and Highway Operation and Maintenance fact sheet when graffiti is removed by painting over.
- Direct runoff from sand blasting and high pressure washing (with no cleaning agents) into a dirt or landscaped area after treating with an appropriate filtering device.
- Plug nearby storm drain inlets and vacuum/pump wash water to the sanitary sewer if authorized to do so if a graffiti abatement method generates wash water containing a cleaning compound (such as high pressure washing with a cleaning compound). Ensure that a non-hazardous cleaning compound is used or dispose as hazardous waste, as appropriate.

Surface Removal and Repair

- Schedule surface removal activities for dry weather if possible.
- Avoid creating excess dust when breaking asphalt or concrete.
- Take measures to protect nearby storm drain inlets prior to breaking up asphalt or concrete (e.g. place hay bales or sand bags around inlets). Clean afterwards by sweeping up as much material as possible.
- Designate an area for clean up and proper disposal of excess materials.
- Remove and recycle as much of the broken pavement as possible to avoid contact with rainfall and stormwater runoff.
- When making saw cuts in pavement, use as little water as possible. Cover each storm drain inlet completely with filter fabric during the sawing operation and contain the slurry by placing straw bales, sandbags, or gravel dams around the inlets. After the liquid drains or evaporates, shovel or vacuum the slurry residue from the pavement or gutter and remove from site.
- Always dry sweep first to clean up tracked dirt. Use a street sweeper or vacuum truck. Do not dump vacuumed liquid in storm drains. Once dry sweeping is complete, the area may be hosed down if needed. Wash water should be directed to landscaping or collected and pumped to the sanitary sewer if allowed.

Concrete Installation and Repair

- Schedule asphalt and concrete activities for dry weather.

- Take measures to protect any nearby storm drain inlets and adjacent watercourses, prior to breaking up asphalt or concrete (e.g. place san bags around inlets or work areas).
- Limit the amount of fresh concrete or cement mortar mixed, mix only what is needed for the job.
- Store concrete materials under cover, away from drainage areas. Secure bags of cement after they are open. Be sure to keep wind-blown cement powder away from streets, gutters, storm drains, rainfall, and runoff.
- Return leftover materials to the transit mixer. Dispose of small amounts of hardened excess concrete, grout, and mortar in the trash.
- Do not wash sweepings from exposed aggregate concrete into the street or storm drain. Collect and return sweepings to aggregate base stockpile, or dispose in the trash.
- Protect applications of fresh concrete from rainfall and runoff until the material has dried.
- Do not allow excess concrete to be dumped onsite, except in designated areas.
- Wash concrete trucks off site or in designated areas on site designed to preclude discharge of wash water to drainage system.

Controlling Litter

- Post "No Littering" signs and enforce anti-litter laws.
- Provide litter receptacles in busy, high pedestrian traffic areas of the community, at recreational facilities, and at community events.
- Cover litter receptacles and clean out frequently to prevent leaking/spillage or overflow.
- Clean parking lots on a regular basis with a street sweeper.

Training

- Provide regular training to field employees and/or contractors regarding surface cleaning and proper operation of equipment.
- Train employee and contractors in proper techniques for spill containment and cleanup.
- Use a training log or similar method to document training.

Spill Response and Prevention

- Refer to SC-11, Spill Prevention, Control & Cleanup.
- Have spill cleanup materials readily available and in a known location.
- Cleanup spills immediately and use dry methods if possible.
- Properly dispose of spill cleanup material.

Other Considerations

- Limitations related to sweeping activities at large parking facilities may include current sweeper technology to remove oil and grease.
- Surface cleaning activities that require discharges to the local sewering agency will require coordination with the agency.
- Arrangements for disposal of the swept material collected must be made, as well as accurate tracking of the areas swept and the frequency of sweeping.

Requirements

Costs

- The largest expenditures for sweeping and cleaning of sidewalks, plazas, and parking lots are in staffing and equipment. Sweeping of these areas should be incorporated into street sweeping programs to reduce costs.

Maintenance

Not applicable

Supplemental Information

Further Detail of the BMP

Community education, such as informing residents about their options for recycling and waste disposal, as well as the consequences of littering, can instill a sense of citizen responsibility and potentially reduce the amount of maintenance required by the municipality.

Additional BMPs that should be considered for parking lot areas include:

- Allow sheet runoff to flow into biofilters (vegetated strip and swale) and infiltration devices.
- Utilize sand filters or oleophilic collectors for oily waste in low concentrations.
- Arrange rooftop drains to prevent drainage directly onto paved surfaces.
- Design lot to include semi-permeable hardscape.
- Structural BMPs such as storm drain inlet filters can be very effective in reducing the amount of pollutants discharged from parking facilities during periods of rain.

References and Resources

Bay Area Stormwater Management Agencies Association (BASMAA). 1996. Pollution From Surface Cleaning Folder http://www.basmaa.org

Model Urban Runoff Program: A How-To Guide for Developing Urban Runoff Programs for Small Municipalities. Prepared by City of Monterey, City of Santa Cruz, California Coastal Commission, Monterey Bay National Marine Sanctuary, Association of Monterey Bay Area Governments, Woodward-Clyde, Central Coast Regional Water Quality Control Board. July. 1998.

Oregon Association of Clean Water Agencies. Oregon Municipal Stormwater Toolbox for Maintenance Practices. June 1998.

Orange County Stormwater Program
http://www.ocwatersheds.com/stormwater/swp_introduction.asp

Santa Clara Valley Urban Runoff Pollution Prevention Program. 1997 Urban Runoff Management Plan. September 1997, updated October 2000.

Santa Clara Valley Urban Runoff Pollution Prevention Program. Maintenance Best Management Practices for the Construction Industry. Brochures: Landscaping, Gardening, and Pool; Roadwork and Paving; and Fresh Concrete and Mortar Application. June 2001.

San Diego Stormwater Co-permittees Jurisdictional Urban Runoff Management Plan. 2001. Municipal Activities Model Program Guidance. November.

Storm Drain Signage SD-13



Design Objectives

- Maximize Infiltration
- Provide Retention
- Slow Runoff
- Minimize Impervious Land Coverage
- ☑ Prohibit Dumping of Improper Materials
- Contain Pollutants
- Collect and Convey

Description

Waste materials dumped into storm drain inlets can have severe impacts on receiving and ground waters. Posting notices regarding discharge prohibitions at storm drain inlets can prevent waste dumping. Storm drain signs and stencils are highly visible source controls that are typically placed directly adjacent to storm drain inlets.

Approach

The stencil or affixed sign contains a brief statement that prohibits dumping of improper materials into the urban runoff conveyance system. Storm drain messages have become a popular method of alerting the public about the effects of and the prohibitions against waste disposal.

Suitable Applications

Stencils and signs alert the public to the destination of pollutants discharged to the storm drain. Signs are appropriate in residential, commercial, and industrial areas, as well as any other area where contributions or dumping to storm drains is likely.

Design Considerations

Storm drain message markers or placards are recommended at all storm drain inlets within the boundary of a development project. The marker should be placed in clear sight facing toward anyone approaching the inlet from either side. All storm drain inlet locations should be identified on the development site map.

Designing New Installations

The following methods should be considered for inclusion in the project design and show on project plans:

- Provide stenciling or labeling of all storm drain inlets and catch basins, constructed or modified, within the project area with prohibitive language. Examples include “NO DUMPING

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– DRAINS TO OCEAN" and/or other graphical icons to discourage illegal dumping.

- Post signs with prohibitive language and/or graphical icons, which prohibit illegal dumping at public access points along channels and creeks within the project area.

Note - Some local agencies have approved specific signage and/or storm drain message placards for use. Consult local agency stormwater staff to determine specific requirements for placard types and methods of application.

Redeveloping Existing Installations

Various jurisdictional stormwater management and mitigation plans (SUSMP, WQMP, etc.) define "redevelopment" in terms of amounts of additional impervious area, increases in gross floor area and/or exterior construction, and land disturbing activities with structural or impervious surfaces. If the project meets the definition of "redevelopment", then the requirements stated under " designing new installations" above should be included in all project design plans.

Additional Information

Maintenance Considerations

- Legibility of markers and signs should be maintained. If required by the agency with jurisdiction over the project, the owner/operator or homeowner's association should enter into a maintenance agreement with the agency or record a deed restriction upon the property title to maintain the legibility of placards or signs.

Placement

- Signage on top of curbs tends to weather and fade.

- Signage on face of curbs tends to be worn by contact with vehicle tires and sweeper brooms.

Supplemental Information

Examples

- Most MS4 programs have storm drain signage programs. Some MS4 programs will provide stencils, or arrange for volunteers to stencil storm drains as part of their outreach program.

Other Resources

A Manual for the Standard Urban Stormwater Mitigation Plan (SUSMP), Los Angeles County Department of Public Works, May 2002.

Model Standard Urban Storm Water Mitigation Plan (SUSMP) for San Diego County, Port of San Diego, and Cities in San Diego County, February 14, 2002.

Model Water Quality Management Plan (WQMP) for County of Orange, Orange County Flood Control District, and the Incorporated Cities of Orange County, Draft February 2003.

Ventura Countywide Technical Guidance Manual for Stormwater Quality Control Measures, July 2002.