

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Potential Media Affected:		SOIL				
Potential Contaminant of Concern:						
UNDER INVESTIGATION						
Site History:						
New site.						
Status:		NO FURTHER ACTION				
Program Type:		SCHOOL EVALUATION				
CalEnviroScreen Score:		35-40%				
Summary Link:		https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60000561				
<u>Completed Activities</u>						
Title:		EOA				
Title Link:		https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000561&enforcement_id=6010548				
Area Name:						
Area Link:						
Sub Area:						
Sub Area Link:						
Document Type:		Environmental Oversight Agreement				
Date Completed:		2/22/2007				
Comments:		Signed Agreement sent (FedEx) to District.				
Title:		PEA Report				
Title Link:		https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60000561&doc_id=6014844				
Area Name:						
Area Link:						
Sub Area:						
Sub Area Link:						
Document Type:		Preliminary Endangerment Assessment Report				
Date Completed:		4/16/2007				
Comments:		DTSC issued " No Further Action Determination" based on a Preliminary Environmental Assessment report.				

<u>28</u>	1 of 2	ENE	0.43 / 2,261.83	192.36 / 34	TRI-COUNTY SANBLASTING INC	PFAS IND
IRVINE CA						
Status:	Unknown	Fac Flips Code:	06059			
Fac Indian Cntry Flg:	N	Compliance Status:	-			
Fac Derived Huc:	18070204	EPA Programs:	-			
Fac Derived Wbd:	180702040103	Federal Facility:	No			
Fac Derived Cd113:	45	Federal Agency:	-			
Fac Derived Cb2010:	060590524173014	Fac Snc Flg:	N			
Fac Informal Count:	0	AIR Flg:	N			
Last Informal Action:	-	NPDES Flg:	N			
Formal Action Count:	0	SDWIS Flg:	N			
Last Formal Action:	-	RCRA Flg:	N			
Fac Total Penalties:	0	TRI Flg:	N			
Fac Penalty Count:	-	GHG Flg:	N			
Date Last Penalty:	-	TRI IDs:	-			
Last Penalty Amt:	-	TRI Releases Trnsfrs:	-			
Fac Qtrs With Nc:	-	TRI on Site Releases:	-			
Programs With Snc:	0	TRI off Site Trnsfrs:	-			
Fac Percent Minority:	57.065	TRI Reporter:	-			
Fac Pop Den:	4465.3	Fac Imp Water Flg:	-			
Count:	1	Fac Major Flg:	-			
Fac County:	ORANGE	Fac Active Flg:	-			
State Other:		Fac Inspection Count:	0			
Region:	09	Date Last Inspection:	-			
Latitude:	33.7029	Days Last Inspection:	-			
Longitude:	-117.76092					
Fac Derived Tribes:	-					
AIR IDs:	-					

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
CAA Permit Types:	-					
CAA NAICS:	-					
CAA SICs:	-					
NPDES IDs:	-					
CWA Permit Types:	-					
CWA NAICS:	-					
CWA SICs:	-					
RCRA IDs:	-					
RCRA Permit Types:	-					
RCRA NAICS:	-					
SDWA IDs:	-					
SDWA System Types:	-					
SDWA Compliance Status:	-					
SDWA Snc Flag:	N					
Fac Collection Meth:	UNKNOWN					
EJSCREEN Flag Us:	Y					
EJSCREEN Report:	https://ejscreen.epa.gov/mapper/mobile/EJSCREEN_mobile.aspx?geometry=%7B%22x%22:-117.76092,%22y%22:33.7029,%22spatialReference%22:%7B%22wkid%22:4326%7D%7D&unit=9035&areatype=&areaid=&basemap=streets&distance=1					
ECHO Facility Report:	https://echo.epa.gov/detailed-facility-report?fid=110040977262					
Industry:	Metal Coating					

28	2 of 2	ENE	0.43 / 2,261.83	192.36 / 34	KARCHER ENVIRONMENTAL INC	PFAS IND
ORANGE COUNTY CA						
Status:	Unknown	Fac Fips Code:	06059			
Fac Indian Cntry Flg:	N	Compliance Status:	-			
Fac Derived Huc:	18070204	EPA Programs:	-			
Fac Derived Wbd:	180702040103	Federal Facility:	No			
Fac Derived Cd113:	45	Federal Agency:	-			
Fac Derived Cb2010:	060590524173014	Fac Snc Flg:	N			
Fac Informal Count:	0	AIR Flag:	N			
Last Informal Action:	-	NPDES Flag:	N			
Formal Action Count:	0	SDWIS Flag:	N			
Last Formal Action:	-	RCRAFlag:	N			
Fac Total Penalties:	0	TRI Flag:	N			
Fac Penalty Count:	-	GHG Flag:	N			
Date Last Penalty:	-	TRI IDs:	-			
Last Penalty Amt:	-	TRI Releases Trnsfrs:	-			
Fac Qtrs With Nc:	-	TRI on Site Releases:	-			
Programs With Snc:	0	TRI off Site Trnsfrs:	-			
Fac Percent Minority:	57.065	TRI Reporter:	-			
Fac Pop Den:	4465.3	Fac Imp Water Flg:	-			
Count:	1	Fac Major Flag:	-			
Fac County:	ORANGE	Fac Active Flag:	-			
State Other :		Fac Inspection Count:	0			
Region:	09	Date Last Inspection:	-			
Latitude:	33.7029	Days Last Inspection:	-			
Longitude:	-117.76092					
Fac Derived Tribes:	-					
AIR IDs:	-					
CAA Permit Types:	-					
CAA NAICS:	-					
CAA SICs:	-					
NPDES IDs:	-					
CWA Permit Types:	-					
CWA NAICS:	-					
CWA SICs:	-					
RCRA IDs:	-					
RCRA Permit Types:	-					
RCRA NAICS:	-					
SDWA IDs:	-					
SDWA System Types:	-					
SDWA Compliance Status:	-					
SDWA Snc Flag:	N					
Fac Collection Meth:	UNKNOWN					

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
EJSCREEN Flag Us:		Y				
EJSCREEN Report:		https://ejscreen.epa.gov/mapper/mobile/EJSCREEN_mobile.aspx?geometry=%7B%22x%22:-117.76092,%22y%22:33.7029,%22spatialReference%22:%7B%22wkid%22:4326%7D%7D&unit=9035&areatype=&areaid=&basemap=streets&distance=1				
ECHO Facility Report:		https://echo.epa.gov/detailed-facility-report?fid=110013976590				
Industry:		Electronics Industry				

29	1 of 1	SW	0.45 / 2,399.37	138.49 / -20	RASHED ARBI 65 KAZAN ST IRVINE CA 92604	RCRA TSD
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EPA Handler ID: CAC003017558
Gen Status Universe: No Report
Contact Name: RASHED ARBI
Contact Address: 65 KAZAN ST , , IRVINE , CA, 92604 ,
Contact Phone No and Ext: 619-957-6104
Contact Email: ANAB@PWSEI.COM
Contact Country:
Land Type:
County Name: ORANGE
EPA Region: 09
Receive Date: 20190531
Location Latitude: 33.693783
Location Longitude: -117.774043

Violation/Evaluation Summary

Note: NO RECORDS: As of Jan 2024, there are no Compliance Monitoring and Enforcement (violation) records associated with this facility (EPA ID).

Handler Summary

Importer Activity: No
Mixed Waste Generator: No
Transporter Activity: No
Transfer Facility: No
Onsite Burner Exemption: No
Smelting, Melting and Refining: No
Underground Injection Control: No
Commercial TSD: No
Used Oil Transporter: No
Used Oil Transfer Facility: No
Used Oil Processor: No
Used Oil Refiner: No
Used Oil Burner: No
Used Oil Market Burner: No
Used Oil Spec Marketer: No

Hazardous Waste Handler Details

Sequence No: 1
Receive Date: 20190531
Handler Name: RASHED ARBI
Federal Waste Generator Code: N
Generator Code Description: Not a Generator, Verified
Source Type: Implementer
TSD Activity: Y

Owner/Operator Details

Owner/Operator Ind:	Current Owner	Street No:	
Type:	Other	Street 1:	65 KAZAN ST
Name:	RASHED ARBI	Street 2:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Date Became Current:				City:	IRVINE	
Date Ended Current:				State:	CA	
Phone:	619-957-6104			Country:		
Source Type:	Implementer			Zip Code:	92604	
Owner/Operator Ind:	Current Operator			Street No:		
Type:	Other			Street 1:	65 KAZAN ST	
Name:	RASHED ARBI			Street 2:		
Date Became Current:				City:	IRVINE	
Date Ended Current:				State:	CA	
Phone:	619-957-6104			Country:		
Source Type:	Implementer			Zip Code:	92604	

30 1 of 2 W 0.47 / 2,491.26 120.99 / -38 CA PFAS GW

Well ID:	CA3010092_055_055	SRS Latitude:	33.699167
Gm Dataset Name:	DDW	SRS Longitude:	-117.778056
Gm Data Source:	DDW	Latitude:	33.699167
Gm Well Category:	MUNICIPAL	Longitude:	-117.778056
SRS Datum:			
Gm Altwell Id1:	3010092-055		
Gm Altwell Id2:			
Gm Altwell Id3:			

Well Details

Gm Cas No:		SRC Chemical:	2801
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorobutane sulfonic acid (PFBS)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2816
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFPA-DA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2813
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	11CIPF3OUDS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)				
Gm Samp Collection Date:		07/12/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2810
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorotetradecanoic acid (PFTeDA)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2810
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorotetradecanoic acid (PFTeDA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:25:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2818
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:25:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2813
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	11CIPF3OUDS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUDS)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2812
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroundecanoic acid (PFUnDA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2801
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorobutane sulfonic acid (PFBS)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2801
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorobutane sulfonic acid (PFBS)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2805
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctane sulfonate (PFOS)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2816
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFFA-DA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2811
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTRIDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotridecanoic acid (PFTTrDA)					
Gm Samp Collection Date:	04/18/2022					
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:	04/18/2022					
SRC Samp Collection Time:	10:25:00					
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB					

Well Details

Gm Cas No:		SRC Chemical:	2815
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2802
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroheptanoic acid (PFHpA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2806
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctanoic acid (PFOA)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2811
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTIDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotridecanoic acid (PFTIDA)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2804
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorononanoic acid (PFNA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2802
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroheptanoic acid (PFHPA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2814
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2812
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDCA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluoroundecanoic acid (PFUnDA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:25:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2803
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXSA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorohexanesulfonic acid (PFHxS)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2804
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		Perfluorononanoic acid (PFNA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2811
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTRIDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotridecanoic acid (PFTrDA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2806
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctanoic acid (PFOA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2811
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTRIDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotridecanoic acid (PFTrDA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2812
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroundecanoic acid (PFUnDA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2802
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroheptanoic acid (PFHpA)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2804
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorononanoic acid (PFNA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2805
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctane sulfonate (PFOS)					
Gm Samp Collection Date:	08/12/2021					
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:	08/12/2021					
SRC Samp Collection Time:	11:05:00					
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB					

Well Details

Gm Cas No:		SRC Chemical:	2818
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Methyl perfluorooctane sulfonamidoacetic acid (NMEFOSAA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2804
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorononanoic acid (PFNA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2807
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorodecanoic acid (PFDA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2815
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2817
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid (NEIFOSAA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2801
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorobutane sulfonic acid (PFBS)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2810
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorotetradecanoic acid (PFTeDA)				
Gm Samp Collection Date:		08/12/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		08/12/2021				
SRC Samp Collection Time:		11:05:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2814
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)				
Gm Samp Collection Date:		07/12/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2807
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorodecanoic acid (PFDA)				
Gm Samp Collection Date:		01/17/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2801
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		Perfluorobutane sulfonic acid (PFBS)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:25:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2816
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFPDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2803
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanesulfonic acid (PFHxS)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2803
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanesulfonic acid (PFHxS)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2809
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanoic acid (PFHxA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2809
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanoic acid (PFHxA)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2813
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	11CIPF3OUDS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUDS)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2810
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotetradecanoic acid (PFTeDA)					
Gm Samp Collection Date:	01/17/2022					
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:	01/17/2022					
SRC Samp Collection Time:	13:00:00					
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB					

Well Details

Gm Cas No:		SRC Chemical:	2809
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanoic acid (PFHxA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2818
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2806
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctanoic acid (PFOA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2803
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanesulfonic acid (PFHxS)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2807
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorodecanoic acid (PFDA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2802
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroheptanoic acid (PFHpA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2805
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorooctane sulfonate (PFOS)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2803
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXSA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorohexanesulfonic acid (PFHxS)				
Gm Samp Collection Date:		01/17/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2809
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorohexanoic acid (PFHxA)				
Gm Samp Collection Date:		01/17/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2817
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		N-Ethyl perfluorooctane sulfonamidoacetic acid (NETFOSAA)				
Gm Samp Collection Date:		07/12/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2810
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotetradecanoic acid (PFTeDA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2805
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctane sulfonate (PFOS)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2817
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid (NETFOSAA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2815
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2808
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFD OA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorododecanoic acid (PFD oDA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2817
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2806
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorooctanoic acid (PFOA)				
Gm Samp Collection Date:		01/17/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2809
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorohexanoic acid (PFHxA)				
Gm Samp Collection Date:		07/12/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2812
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDCA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluoroundecanoic acid (PFUnDA)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2810
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorotetradecanoic acid (PFTeDA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2815
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	4,8-Dioxa-3H-perfluorononanoic acid (ADONA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2813
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	11CIPF3OUDS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	11-Chloroeicosafluoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2811
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTRIDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotridecanoic acid (PFTrDA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2816
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFA-DA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2818
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2815
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		4,8-Dioxa-3H-perfluorononanoic acid (ADONA)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2802
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		Perfluoroheptanoic acid (PFHpA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:25:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2803
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanesulfonic acid (PFHxS)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2813
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	11CIPF3OUDS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUDS)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2810
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTEDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorotetradecanoic acid (PFTeDA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2808
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFD OA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorododecanoic acid (PFD OA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2803
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHXSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanesulfonic acid (PFHxS)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2817
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid (NEtFOSAA)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2812
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroundecanoic acid (PFUnDA)					
Gm Samp Collection Date:	08/12/2021					
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:	08/12/2021					
SRC Samp Collection Time:	11:05:00					
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB					

Well Details

Gm Cas No:		SRC Chemical:	2807
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorodecanoic acid (PFDA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2808
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFDOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorododecanoic acid (PFDoDA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2813
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	11ClPF3OUDS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUDS)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2814
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2802
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroheptanoic acid (PFHpA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2814
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2805
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorooctane sulfonate (PFOS)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2801
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorobutane sulfonic acid (PFBS)				
Gm Samp Collection Date:		07/12/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2815
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		4,8-Dioxa-3H-perfluorononanoic acid (ADONA)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2813
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	11CIPF3OUDS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:					11-Chloroeicosafuoro-3-oxaundecane-1-sulfonic acid (11-Cl-PF3OUdS)	
Gm Samp Collection Date:			04/18/2022			
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:			04/18/2022			
SRC Samp Collection Time:			10:25:00			
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:			ORANGE COUNTY WD - MAIN LAB			

Well Details

Gm Cas No:		SRC Chemical:	2807
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:			
Gm Samp Collection Date:			
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:			
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2816
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFFA-DA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:			2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)
Gm Samp Collection Date:			
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:			
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:			ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2804
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:			Perfluorononanoic acid (PFNA)
Gm Samp Collection Date:			
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:			
SRC Samp Collection Time:			
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2817
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid (NETFOSAA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2804
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorononanoic acid (PFNA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2808
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFDOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorododecanoic acid (PFDoDA)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2815
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	ADONA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		4,8-Dioxa-3H-perfluorononanoic acid (ADONA)				
Gm Samp Collection Date:		08/12/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		08/12/2021				
SRC Samp Collection Time:		11:05:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2814
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)				
Gm Samp Collection Date:		01/17/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2811
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTRIDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorotridecanoic acid (PFTTrDA)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2809
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorohexanoic acid (PFHxA)				
Gm Samp Collection Date:		08/12/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		08/12/2021				
SRC Samp Collection Time:		11:05:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2816
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFA-DA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2809
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorohexanoic acid (PFHxA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2801
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFBSA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorobutane sulfonic acid (PFBS)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2807
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorodecanoic acid (PFDA)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2811
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFTRIDA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorotridecanoic acid (PFTIDA)				
Gm Samp Collection Date:		01/17/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		01/17/2022				
SRC Samp Collection Time:		13:00:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2807
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNDCA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorodecanoic acid (PFDA)				
Gm Samp Collection Date:		04/18/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2816
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	HFA-DA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		2,3,3,3-tetrafluoro-2-(1,1,2,2,3,3,3-heptafluoropropoxy) propanoic acid (HFPO-DA)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2812
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroundecanoic acid (PFUnDA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2808
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFDOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorododecanoic acid (PFDoDA)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2808
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFDOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorododecanoic acid (PFDoDA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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SRC Lab Note: ORANGE COUNTY WD - MAIN LAB

Well Details

Gm Cas No:		SRC Chemical:	2814
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2814
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	9CIPF3ONS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	9-Chlorohexadecafluoro-3-oxanonane-1-sulfonic acid (9-Cl-PF3ONS)		
Gm Samp Collection Date:	04/27/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/27/2021		
SRC Samp Collection Time:	08:40:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2805
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctane sulfonate (PFOS)		
Gm Samp Collection Date:	07/12/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	07/12/2022		
SRC Samp Collection Time:	11:10:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2818
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:	N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)					
Gm Samp Collection Date:	07/12/2022					
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:	07/12/2022					
SRC Samp Collection Time:	11:10:00					
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB					

Well Details

Gm Cas No:		SRC Chemical:	2802
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFHPA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroheptanoic acid (PFHpA)		
Gm Samp Collection Date:	10/11/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	10/11/2021		
SRC Samp Collection Time:	11:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2817
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NETFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Ethyl perfluorooctane sulfonamidoacetic acid (NEFOSAA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2806
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctanoic acid (PFOA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
SRC Samp Collection Date:		04/18/2022				
SRC Samp Collection Time:		10:25:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2804
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFNA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorononanoic acid (PFNA)		
Gm Samp Collection Date:	08/12/2021		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	08/12/2021		
SRC Samp Collection Time:	11:05:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2818
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)		
Gm Samp Collection Date:	01/17/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	01/17/2022		
SRC Samp Collection Time:	13:00:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Gm Cas No:		SRC Chemical:	2812
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifie:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFUNDCA	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluoroundecanoic acid (PFUnDA)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:30:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

Well Details

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Gm Cas No:					SRC Chemical:	2806
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorooctanoic acid (PFOA)				
Gm Samp Collection Date:		07/12/2022				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		07/12/2022				
SRC Samp Collection Time:		11:10:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2818
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	NMEFOSAA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		N-Methyl perfluorooctane sulfonamidoacetic acid (NMeFOSAA)				
Gm Samp Collection Date:		04/27/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		04/27/2021				
SRC Samp Collection Time:		08:40:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2806
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	
Gm Chemical Name:		Perfluorooctanoic acid (PFOA)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:					SRC Chemical:	2808
Gm Result:	2				SRC Result:	
Gm Result Modifier:	<				SRC Result Modifie:	Y
Gm Chemical Units:	NG/L				Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFDOA				SRC Report Limit:	2
Gm Reporting Limit:	2				SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:					SRC Well Depth Ft:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Gm Chemical Name:		Perfluorododecanoic acid (PFDoDA)				
Gm Samp Collection Date:		10/11/2021				
Gm Screen Top Depth Ft:						
Gm Screen Bottom Depth Ft:						
SRC Samp Collection Date:		10/11/2021				
SRC Samp Collection Time:		11:30:00				
SRC Screen Top Depth Ft:						
SRC Screen Bottom Depth Ft:						
SRC Lab Note:		ORANGE COUNTY WD - MAIN LAB				

Well Details

Gm Cas No:		SRC Chemical:	2805
Gm Result:	2	SRC Result:	
Gm Result Modifier:	<	SRC Result Modifier:	Y
Gm Chemical Units:	NG/L	Src Chemical Units:	NG/L
Gm Chemical Vvl:	PFOS	SRC Report Limit:	2
Gm Reporting Limit:	2	SRC Analytic Meth:	EPA 537.1
Gm Well Depth Ft:		SRC Well Depth Ft:	
Gm Chemical Name:	Perfluorooctane sulfonate (PFOS)		
Gm Samp Collection Date:	04/18/2022		
Gm Screen Top Depth Ft:			
Gm Screen Bottom Depth Ft:			
SRC Samp Collection Date:	04/18/2022		
SRC Samp Collection Time:	10:25:00		
SRC Screen Top Depth Ft:			
SRC Screen Bottom Depth Ft:			
SRC Lab Note:	ORANGE COUNTY WD - MAIN LAB		

30 2 of 2 W 0.47 / 2,491.26 120.99 / -38 WELL 76 IRVINE CA PFAS SAMPLING

Global ID:	W0603010092	Latitude:	33.699167
Location ID:	CA3010092_055_055	Longitude:	-117.778056
Field Pt Class:	PUBW		
Site Use:	Drinking Water Wells		
Site Type:	DDW Well		
Facility Type:			
Status:			

PFAS Chemicals

Sample ID:		Reporting Limit:	
Matrix:	Liquid	Detection Limit:	
Chemical:	11CIPF3OUDS	QRAA:	
Qualifier:	<	Units:	NG/L
Value :	2	Date:	8/12/2021
Lab Notes:			
Regional Board:			
Treated Drinking Water Dt:			
Treated Drinking Water Qualifi:			
Treated Drinking Water Reporti:			
Treatd Drinking Water Sample:			
Treated Drinking Water Units:			
Treated Drinking Water Value:			

Sample ID:		Reporting Limit:	
Matrix:	Liquid	Detection Limit:	
Chemical:	PFUNDCA	QRAA:	
Qualifier:	<	Units:	NG/L
Value :	2	Date:	4/27/2021
Lab Notes:			
Regional Board:			
Treated Drinking Water Dt:			
Treated Drinking Water Qualifi:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID: Matrix: Liquid Chemical: PFBSA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 7/14/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
Reporting Limit: Detection Limit: QRAA: 2 Units: NG/L Date: 7/12/2022						
Sample ID: Matrix: Liquid Chemical: PFOA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 4/18/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
Reporting Limit: Detection Limit: QRAA: 0 Units: NG/L Date: 4/18/2022						
Sample ID: Matrix: Liquid Chemical: ADONA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 8/12/2021						
Sample ID: Matrix: Liquid Chemical: PFTRIDA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 4/27/2021						
Sample ID: Matrix: Liquid Chemical: PFUNDCA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt:						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 1/17/2022						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID: Matrix: Liquid Chemical: PFHA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 7/14/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 7/12/2022						
Sample ID: Matrix: Liquid Chemical: PFTEDA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 8/12/2021						
Sample ID: Matrix: Liquid Chemical: PFHPA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 4/27/2021						
Sample ID: Matrix: Liquid Chemical: PFUNDCA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 4/18/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 4/18/2022						
Sample ID: Matrix: Liquid Chemical: 9CIPF3ONS Qualifier: < Value : 2 Lab Notes: Regional Board:						
Reporting Limit: Detection Limit: QRAA: Units: NG/L Date: 4/27/2021						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix: Liquid				Detection Limit:		
Chemical: 9CIPF3ONS				QRAA:		
Qualifier: <				Units: NG/L		
Value : 2				Date: 8/12/2021		
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix: Liquid				Detection Limit:		
Chemical: PFOA				QRAA: 0		
Qualifier: <				Units: NG/L		
Value : 2				Date: 4/27/2021		
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix: Liquid				Detection Limit:		
Chemical: PFTRIDA				QRAA:		
Qualifier: <				Units: NG/L		
Value : 2				Date: 8/12/2021		
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix: Liquid				Detection Limit:		
Chemical: PFOA				QRAA: 0		
Qualifier: <				Units: NG/L		
Value : 2				Date: 1/17/2022		
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix: Liquid				Detection Limit:		
Chemical: PFUNDCA				QRAA:		
Qualifier: <				Units: NG/L		
Value : 2				Date: 8/12/2021		
Lab Notes:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFOS				Detection Limit:	
Qualifier:	<				QRAA:	0
Value :	2				Units:	NG/L
Lab Notes:				Date:		10/11/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	11CIPF3OUDS				Detection Limit:	
Qualifier:	<				QRAA:	NG/L
Value :	2				Units:	NG/L
Lab Notes:				Date:		4/27/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	11CIPF3OUDS				Detection Limit:	
Qualifier:	<				QRAA:	NG/L
Value :	2				Units:	NG/L
Lab Notes:				Date:		7/12/2022
Regional Board:						
Treated Drinking Water Dt:		7/14/2022				
Treated Drinking Water Qualifi:		<				
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:		CA3010092_060_060				
Treated Drinking Water Units:		NG/L				
Treated Drinking Water Value:		2				
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	ADONA				Detection Limit:	
Qualifier:	<				QRAA:	NG/L
Value :	2				Units:	NG/L
Lab Notes:				Date:		4/18/2022
Regional Board:						
Treated Drinking Water Dt:		4/18/2022				
Treated Drinking Water Qualifi:		<				
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:		CA3010092_060_060				
Treated Drinking Water Units:		NG/L				
Treated Drinking Water Value:		2				
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHXSA				Detection Limit:	
Qualifier:	<				QRAA:	0
Value :	2				Units:	NG/L
Lab Notes:				Date:		10/11/2021

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID: Matrix: Liquid Chemical: PFOS Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
				Reporting Limit: Detection Limit: QRAA: Units: Date:	0 NG/L 1/17/2022	
Sample ID: Matrix: Liquid Chemical: HFPA-DA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 7/14/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
				Reporting Limit: Detection Limit: QRAA: Units: Date:	0 NG/L 7/12/2022	
Sample ID: Matrix: Liquid Chemical: PFHXSA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 4/18/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
				Reporting Limit: Detection Limit: QRAA: Units: Date:	0 NG/L 4/18/2022	
Sample ID: Matrix: Liquid Chemical: PFOS Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
				Reporting Limit: Detection Limit: QRAA: Units: Date:	0 NG/L 4/27/2021	
Sample ID: Matrix: Liquid Chemical: PFOA Qualifier: <						
				Reporting Limit: Detection Limit: QRAA: Units:	0 NG/L	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Value :	2			Date:	8/12/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFDOA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	1/17/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFTRIDA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	4/18/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFTEDA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	7/12/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFNA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	1/17/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	HFPDA			QRAA:		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	1/17/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	NETFOSAA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	10/11/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFNDCA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	4/18/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	ADONA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	4/27/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFNDCA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	10/11/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Chemical:	PFHA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/18/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	11CIPF3OUDS				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFBSA				QRAA:	2
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/27/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NMEFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/18/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NETFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/18/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Matrix:	Liquid				Detection Limit:	
Chemical:	PFBSA				QRAA:	2
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
 Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
 Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFBSA				Detection Limit:	
Qualifier:	<				QRAA:	2
Value :	2				Units:	NG/L
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
 Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHSA				Detection Limit:	
Qualifier:	<				QRAA:	0
Value :	2				Units:	NG/L
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
 Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFTRIDA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFHXSA				QRAA:	0
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NETFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	8/12/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFHPA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNDCA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	8/12/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFOA				QRAA:	0
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/27/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFD OA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFOS				QRAA:	0
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNDCA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/27/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFTRIDA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFHPA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	9CIPF3ONS				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NMEFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFTEDA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/27/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFUNDCA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Units:		NG/L				
Treated Drinking Water Value:		2				
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	11CIPF3OUDS				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	ADONA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NMEFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFDOA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/27/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID: Matrix: Liquid Chemical: PFOS Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Reporting Limit: Detection Limit: QRAA: 0 Units: NG/L Date: 8/12/2021						
Sample ID: Matrix: Liquid Chemical: ADONA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 7/14/2022 Treated Drinking Water Qualifi: < Treated Drinking Water Reporti: Treatd Drinking Water Sample: CA3010092_060_060 Treated Drinking Water Units: NG/L Treated Drinking Water Value: 2						
Reporting Limit: Detection Limit: QRAA: 2 Units: NG/L Date: 8/12/2021						
Sample ID: Matrix: Liquid Chemical: PFBSA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Reporting Limit: Detection Limit: QRAA: 2 Units: NG/L Date: 1/17/2022						
Sample ID: Matrix: Liquid Chemical: PFHSA Qualifier: < Value : 2 Lab Notes: Regional Board: Treated Drinking Water Dt: 4/18/2022 Treated Drinking Water Qualifi: <						
Reporting Limit: Detection Limit: QRAA: NG/L Units: NG/L Date: 4/18/2022						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:		CA3010092_060_060				
Treated Drinking Water Units:		NG/L				
Treated Drinking Water Value:		2				
Sample ID:						
Matrix:		Liquid		Reporting Limit:		
Chemical:		11CIPF3OUDS		Detection Limit:		
Qualifier:		<		QRAA:		
Value :		2		Units:		NG/L
Lab Notes:				Date:		4/18/2022
Regional Board:						
Treated Drinking Water Dt:		4/18/2022				
Treated Drinking Water Qualifi:		<				
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:		CA3010092_060_060				
Treated Drinking Water Units:		NG/L				
Treated Drinking Water Value:		2				
Sample ID:						
Matrix:		Liquid		Reporting Limit:		
Chemical:		PFDOA		Detection Limit:		
Qualifier:		<		QRAA:		
Value :		2		Units:		NG/L
Lab Notes:				Date:		10/11/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:		Liquid		Reporting Limit:		
Chemical:		PFHA		Detection Limit:		
Qualifier:		<		QRAA:		
Value :		2		Units:		NG/L
Lab Notes:				Date:		4/27/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:		Liquid		Reporting Limit:		
Chemical:		9CIPF3ONS		Detection Limit:		
Qualifier:		<		QRAA:		
Value :		2		Units:		NG/L
Lab Notes:				Date:		10/11/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:		Liquid		Reporting Limit:		
Chemical:		PFOS		Detection Limit:		
Qualifier:		<		QRAA:		
Value :		2		Units:		0
Lab Notes:				Date:		NG/L
Regional Board:						
Treated Drinking Water Dt:		4/18/2022				

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFTEDA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	10/11/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNDCA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	7/12/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNDCA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	8/12/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NETFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFTEDA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	1/17/2022
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	HFPDA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	4/18/2022
Regional Board:						
Treated Drinking Water Dt: 4/18/2022						
Treated Drinking Water Qualifi: <						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample: CA3010092_060_060						
Treated Drinking Water Units: NG/L						
Treated Drinking Water Value: 2						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	9CIPF3ONS				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	7/12/2022
Regional Board:						
Treated Drinking Water Dt: 7/14/2022						
Treated Drinking Water Qualifi: <						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample: CA3010092_060_060						
Treated Drinking Water Units: NG/L						
Treated Drinking Water Value: 2						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFDOA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	8/12/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHXSA				Detection Limit:	
Qualifier:	<				QRAA:	0
Value :	2				Units:	NG/L
Lab Notes:					Date:	4/27/2021

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHPA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	7/12/2022
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	10/11/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	NETFOSAA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	4/27/2021
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFTRIDA				Detection Limit:	
Qualifier:	<				QRAA:	
Value :	2				Units:	NG/L
Lab Notes:					Date:	7/12/2022
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid				Reporting Limit:	
Chemical:	PFHXSA				Detection Limit:	
Qualifier:	<				QRAA:	0
Value :	2				Units:	NG/L
Lab Notes:					Date:	8/12/2021

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid			Reporting Limit:		
Chemical:	PFHA			Detection Limit:		
Qualifier:	<			QRAA:		
Value :	2			Units:	NG/L	
				Date:	8/12/2021	
Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid			Reporting Limit:		
Chemical:	HFPA-DA			Detection Limit:		
Qualifier:	<			QRAA:		
Value :	2			Units:	NG/L	
				Date:	10/11/2021	
Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid			Reporting Limit:		
Chemical:	NMEFOSAA			Detection Limit:		
Qualifier:	<			QRAA:		
Value :	2			Units:	NG/L	
				Date:	4/27/2021	
Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid			Reporting Limit:		
Chemical:	PFOA			Detection Limit:	0	
Qualifier:	<			QRAA:	NG/L	
Value :	2			Units:	NG/L	
				Date:	10/11/2021	
Lab Notes: Regional Board: Treated Drinking Water Dt: Treated Drinking Water Qualifi: Treated Drinking Water Reporti: Treatd Drinking Water Sample: Treated Drinking Water Units: Treated Drinking Water Value:						
Sample ID:						
Matrix:	Liquid			Reporting Limit:		
Chemical:	PFTEDA			Detection Limit:		
Qualifier:	<			QRAA:		
				Units:	NG/L	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Value :	2			Date:	4/18/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFHPA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	8/12/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	HFA-DA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	4/27/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFNA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	10/11/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFUNDCA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	10/11/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	PFDOA			QRAA:		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	4/18/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	NETFOSAA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	7/12/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	NMEFOSAA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	7/12/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	7/14/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	HFPA-DA			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	8/12/2021	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		
Chemical:	9CIPF3ONS			QRAA:		
Qualifier:	<			Units:	NG/L	
Value :	2			Date:	4/18/2022	
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					
Sample ID:				Reporting Limit:		
Matrix:	Liquid			Detection Limit:		

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Chemical:	ADONA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	1/17/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	NMEFOSAA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	8/12/2021
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:						
Treated Drinking Water Qualifi:						
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:						
Treated Drinking Water Units:						
Treated Drinking Water Value:						
Sample ID:					Reporting Limit:	
Matrix:	Liquid				Detection Limit:	
Chemical:	PFNA				QRAA:	
Qualifier:	<				Units:	NG/L
Value :	2				Date:	4/18/2022
Lab Notes:						
Regional Board:						
Treated Drinking Water Dt:	4/18/2022					
Treated Drinking Water Qualifi:	<					
Treated Drinking Water Reporti:						
Treatd Drinking Water Sample:	CA3010092_060_060					
Treated Drinking Water Units:	NG/L					
Treated Drinking Water Value:	2					

31	1 of 1	W	0.49 / 2,583.75	119.37 / -39	OR. CO. FIRE STATION #26-57/58 4691 WALNUT AVE IRVINE CA 92714	LUST
Global ID:	T0605901530				Census Tract:	6059052526
Site Facility Type:					Census Tract (SRCH):	6059052526
Status:	Completed - Case Closed				Oil Field (SRCH):	
Status Date (DL):	4/28/1993				Oil Field Oper (SRCH):	
Cleanup Status:					Latitude:	
Case Type (DL):	LUST Cleanup Site				Longitude:	
RWQCB Region (DL):	SANTA ANA RWQCB (REGION 8)					
Site Facility Name:						
Business Name (DL):	OR. CO. FIRE STATION #26-57/58					
Address:	4691 WALNUT AVE					
City:	IRVINE					
State:	CA					
Zip:	92714					
County:	ORANGE					

GeoTracker Sites Data Download - Site Details

CUF Case: NO
 Lead Agency: SANTA ANA RWQCB (REGION 8)
 Case Worker:
 Local Agency:
 RB Case No: 083002062T
 Local Case No:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
File Location:						
Potential COC:		Gasoline				
Potential Media of Concern:		Soil				
Begin Date:		12/7/1991				
How Discovered:		Tank Tightness Test				
How Discovered Description:						
Stop Method:						
Stop Description:						
Calwater Watershed Name:		Santa Ana River - Lower Santa Ana River - East Coastal Plain (801.11)				
DWR GW Subbasin Name:		Coastal Plain Of Orange County (8-001)				
Disadvantaged Community:						
CalEnvScreen Score:						
Coordinate Source:		Google Geocode				
Discharge Cause:						
Discharge Source:		Piping				
EPA Region:		9				
Leak Reported Dt:		1992-02-06 00:00:00				
Military DoD Site:		No				
No Further Action Dt:		1993-04-28 00:00:00				
Qty Rlsd Gallons:						
Facility Project Sub Type:						
Calenviroscreen 3 Score:		11-15%				
Calenviroscreen 4 Score:		25-30%				
Site History:						

GeoTracker Sites Data Download - Status History

Status: Completed - Case Closed
Status Date: 4/28/1993

Status: Open - Case Begin Date
Status Date: 12/7/1991

GeoTracker Search - Regulatory Profile (as of October 16, 2023)

Site Facility Name: OR. CO. FIRE STATION #26-57/58
Site Facility Type: LUST CLEANUP SITE
Cleanup Status: COMPLETED - CASE CLOSED
Address: 4691 WALNUT AVE
City: IRVINE
Zip: 92714
County: ORANGE
Report Link: https://geotracker.waterboards.ca.gov/profile_report?global_id=T0605901530
Cleanup Status Detail: COMPLETED - CASE CLOSED AS OF 4/28/1993
Project Status:
Cleanup History Link: https://geotracker.waterboards.ca.gov/profile_report_include?global_id=T0605901530&tabname=regulatoryhistory
Potential COC: GASOLINE
Potential Media of Concern: SOIL
File Location:
User Defined Beneficial Use:
Designated Beneficial Use: MUN, AGR, IND, PROC
DWR GW Sub Basin: Coastal Plain Of Orange County (8-001)
Calwater Watershed Name: Santa Ana River - Lower Santa Ana River - East Coastal Plain (801.11)
Post Closure Site Management:
Future Land Use:
Cleanup Oversight Agencies: SANTA ANA RWQCB (REGION 8) (LEAD) - CASE #: 083002062T
CUF Claim No:
CUF Priority Assig:
CUF Amount Paid:
WDR Place Type:
WDR File No:
WDR Order No:
Project Oversight Agencies:
Facility Type:
Composting Method:
Gmdwtr Monitoring Frequency:

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Designated Beneficial Use Desc: Municipal and Domestic Supply, Agricultural Supply, Industrial Service Supply, Industrial Process Supply

Site History:

No site history available

GeoTracker Search - Cleanup Status History (as of October 16, 2023)

Status: Completed - Case Closed
Date : 4/28/1993

Status: Open - Case Begin Date
Date : 12/7/1991

GeoTracker Search - Regulatory Activities (as of October 16, 2023)

Action Type: Leak Action
Action: Leak Reported
Action Date: 2/6/1992
Received Issue Date:
Doc Link:
Title Description Comments:

Action Type: Leak Action
Action: Leak Stopped
Action Date: 12/8/1991
Received Issue Date:
Doc Link:
Title Description Comments:

Action Type: Leak Action
Action: Leak Discovery
Action Date: 12/7/1991
Received Issue Date:
Doc Link:
Title Description Comments:

32	1 of 2	E	0.69 / 3,632.38	213.06 / 54	WOODBURY (AREA 9) MIDDLE SCHOOL JEFFREY ROAD / BRYAN AVENUE IRVINE CA 92620	SCH
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Estor/EPA ID:	30000005	Acres:	21 ACRES
Nat Priority List:	NO	Supervisor:	SHAHIR HADDAD
Census Tract:	6059052418	County:	ORANGE
Permit Renewl Lead:		Latitude:	33.7006
Project Manager:	SHAHIR HADDAD	Longitude:	-117.7556
Site Code:	404563		
Cleanup Status:	NO FURTHER ACTION AS OF 10/13/2004		
Cleanup Oversight Agencies:	DTSC - LEAD AGENCY		
Assembly District:	73		
Senate District:	37		
School District:	IRVINE UNIFIED SCHOOL DISTRICT		
Office:	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH		
Public Participatn Spclst:			
Special Program:			
Funding:	SCHOOL DISTRICT		
Site Type:	SCHOOL		
APN:	NONE SPECIFIED		
Past Use that Caused Contam:	UNKNOWN		
Potential Media Affected:	SOIL, SOIL VAPOR		
Potential Contamin of Concern:			

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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ARSENIC
ORGANOCHLORINE PESTICIDES (8081 OCPS)
PETROLEUM
VOLATILE ORGANICS (8260B VOCS)

SITE HISTORY:

The Site has been utilized for agricultural purposes, indicating potential pesticide application. Fuel underground storage tanks previously occupied the Site.

Status:	NO FURTHER ACTION
Program Type:	SCHOOL EVALUATION
CalEnviroScreen Score:	35-40%
Summary Link:	https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=30000005

Completed Activities

Title:	Site Inspections/visit
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Site Inspections/Msit (Non LUR)
Date Completed:	3/3/2005
Comments:	

Title:	PEA workplan
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Preliminary Endangerment Assessment Workplan
Date Completed:	2/9/2005
Comments:	

Title:	Environmental Oversight Agreement
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30000005&enforcement_id=6003066
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Environmental Oversight Agreement
Date Completed:	10/13/2004
Comments:	

Title:	Preliminary Endangerment Assessment Report
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30000005&doc_id=6003068
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Preliminary Endangerment Assessment Report
Date Completed:	6/6/2005
Comments:	

32	2 of 2	E	0.69 / 3,632.38	213.06 / 54	WOODBURY (AREA 9) MIDDLE SCHOOL JEFFREY ROAD / BRYAN AVENUE IRVINE CA 92620	ENVIROSTOR												
<table> <tr> <td>Estor/EPA ID:</td> <td>30000005</td> <td>Assembly District:</td> <td>73</td> </tr> <tr> <td>Site Code:</td> <td>404563</td> <td>Senate District:</td> <td>37</td> </tr> <tr> <td>Nat Priority List:</td> <td>NO</td> <td>Permit Renewal Lead:</td> <td></td> </tr> </table>							Estor/EPA ID:	30000005	Assembly District:	73	Site Code:	404563	Senate District:	37	Nat Priority List:	NO	Permit Renewal Lead:	
Estor/EPA ID:	30000005	Assembly District:	73															
Site Code:	404563	Senate District:	37															
Nat Priority List:	NO	Permit Renewal Lead:																

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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APN:	NONE SPECIFIED	Public Partici Spclst:				
Census Tract:	6059052418	Project Manager:	SHAHIR HADDAD			
Site Type:	SCHOOL	County:	ORANGE			
Address Description:	JEFFREY ROAD / BRYAN AVENUE	Latitude:	33.7006			
Office:	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH	Longitude:	-117.7556			
Special Program:		Acres:	21 ACRES			
Funding:	SCHOOL DISTRICT	Supervisor:	SHAHIR HADDAD			
Cleanup Status:	NO FURTHER ACTION AS OF 10/13/2004					
Cleanup Oversight Agencies:	DTSC - LEAD AGENCY					
School District:	IRVINE UNIFIED SCHOOL DISTRICT					
Past Use that Caused Contam:	UNKNOWN					
Potential Media Affected:	SOIL, SOIL VAPOR					
Potential Contamin of Concern:						

ARSENIC
ORGANOCHLORINE PESTICIDES (8081 OCPS)
PETROLEUM
VOLATILE ORGANICS (8260B VOCS)

Site History:

The Site has been utilized for agricultural purposes, indicating potential pesticide application. Fuel underground storage tanks previously occupied the Site.

Status:	NO FURTHER ACTION
Program Type:	SCHOOL EVALUATION
CalEnviroScreen Score:	35-40%
Summary Link:	https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=30000005

Completed Activities

Title:	PEA workplan
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Preliminary Endangerment Assessment Workplan
Date Completed:	2/9/2005
Comments:	

Title:	Site Inspections/visit
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Site Inspections/Visit (Non LUR)
Date Completed:	3/3/2005
Comments:	

Title:	Environmental Oversight Agreement
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30000005&enforcement_id=6003066
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Environmental Oversight Agreement
Date Completed:	10/13/2004
Comments:	

Title:	Preliminary Endangerment Assessment Report
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30000005&doc_id=6003068
Area Name:	
Area Link:	
Sub Area:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Sub Area Link:
Document Type: Preliminary Endangerment Assessment Report
Date Completed: 6/6/2005
Comments:

33	1 of 2	W	0.75 / 3,983.58	109.79 / -49	IRVINE HIGH SCHOOL EXPANSION PROJECT 4321 WALNUT AVENUE IRVINE CA 92604	SCH
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Estor/EPA ID:	60001920	Acres:	0.62 ACRES
Nat Priority List:	NO	Supervisor:	SHAHIR HADDAD
Census Tract:	6059052526	County:	ORANGE
Permit Renewal Lead:		Latitude:	33.7025593
Project Manager:	JOHNSON ABRAHAM	Longitude:	-117.782529
Site Code:	404889		
Cleanup Status:	NO FURTHER ACTION AS OF 3/18/2014		
Cleanup Oversight Agencies:	DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY		
Assembly District:	73		
Senate District:	37		
School District:	IRVINE UNIFIED SCHOOL DISTRICT		
Office:	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH		
Public Participatn Spclst:			
Special Program:			
Funding:	SCHOOL DISTRICT		
Site Type:	SCHOOL		
APN:	44902111		
Past Use that Caused Contam:	AGRICULTURAL - ROW CROPS		
Potential Media Affected:	SOIL		
Potential Contamin of Concern:			

DDD
 DDE
 DDT
 DIOXIN (AS 2,3,7,8-TCDD TEQ)
 ENDRIN

SITE HISTORY:

The Irvine Unified School District (District) plans to construct a two-story classroom building on the existing Irvine High School campus to accommodate approximately 324 additional students in 12 classrooms. The proposed project area site (Site) occupies approximately 0.6 acres of land. The Site is bounded by the existing school buildings on the west and south. Irvine High School is bounded by Escalar on the west followed by residential, Interstate 5 on the north, Heritage Park on the east and Walnut Avenue followed by residential on the south. The school was constructed in 1970. Prior to 1970, the Site was utilized for agricultural purposes (orchard) from at least 1938. Although no information was provided regarding agricultural chemicals used on Site, pesticides and fertilizers were commonly used for agricultural activities. The The District submitted a PEA Workplan - Technical Memorandum that includes activities to investigate residual agricultural chemicals and miscellaneous trash that may pose a threat to human health and the environment.

On January 3, 2014, the District submitted the PEA. The Site soil was investigated for arsenic, lead and organochlorine pesticides from agricultural use. The PEA concluded that further environmental investigation of the Site was not necessary. Based on review of the PEA, neither a release of hazardous material nor the presence of a naturally occurring hazardous material which would pose a threat to public health or the environment under unrestricted land use was indicated at the Site. Therefore, DTSC concurred with the conclusion of the PEA that further environmental investigation of the Site was not required and approved the PEA.

Status:	NO FURTHER ACTION
Program Type:	SCHOOL EVALUATION
CalEnviroScreen Score:	25-30%
Summary Link:	https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60001920

Completed Activities

Title:	Preliminary Endangerment Assessment Tech Memo
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001920&doc_id=60336978
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
Document Type: Preliminary Endangerment Assessment Tech Memo Date Completed: 12/4/2013 Comments: Title: EOA Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001920&enforcement_id=60335560 Area Name: Area Link: Sub Area: Sub Area Link: Document Type: Environmental Oversight Agreement Date Completed: 9/17/2013 Comments: Fully executed EOA sent (FedEx) to District. Title: Preliminary Environmental Assessment Report Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001920&doc_id=60336980 Area Name: Area Link: Sub Area: Sub Area Link: Document Type: Preliminary Endangerment Assessment Report Date Completed: 3/18/2014 Comments:						
33	2 of 2	W	0.75 / 3,983.58	109.79 / -49	IRVINE HIGH SCHOOL EXPANSION PROJECT 4321 WALNUT AVENUE IRVINE CA 92604	ENVIROSTOR
Estor/EPA ID: 60001920 Site Code: 404889 Nat Priority List: NO APN: 44902111 Census Tract: 6059052526 Site Type: SCHOOL Address Description: 4321 WALNUT AVENUE Office: SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH Special Program: Funding: SCHOOL DISTRICT Cleanup Status: NO FURTHER ACTION AS OF 3/18/2014 Cleanup Oversight Agencies: DTSC - SITE CLEANUP PROGRAM - LEAD AGENCY School District: IRVINE UNIFIED SCHOOL DISTRICT Past Use that Caused Contam: AGRICULTURAL - ROW CROPS Potential Media Affected: SOIL Potential Contaminant of Concern: DDD DDE DDT DIOXIN (AS 2,3,7,8-TCDD TEQ) ENDRIN Site History: The Irvine Unified School District (District) plans to construct a two-story classroom building on the existing Irvine High School campus to accommodate approximately 324 additional students in 12 classrooms. The proposed project area site (Site) occupies approximately 0.6 acres of land. The Site is bounded by the existing school buildings on the west and south. Irvine High School is bounded by Escalar on the west followed by residential, Interstate 5 on the north, Heritage Park on the east and Walnut Avenue followed by residential on the south. The school was constructed in 1970. Prior to 1970, the Site was utilized for agricultural purposes (orchard) from at least 1938. Although no information was provided regarding agricultural chemicals used on Site, pesticides and fertilizers were commonly used for agricultural activities. The The District submitted a PEA Workplan - Technical Memorandum that includes activities to investigate residual agricultural chemicals and miscellaneous trash that may pose a threat to human health and the environment. On January 3, 2014, the District submitted the PEA. The Site soil was investigated for arsenic, lead and organochlorine pesticides from agricultural use. The PEA concluded that further environmental investigation of the Site was not necessary. Based on review of the PEA, neither a release of hazardous material nor the presence of a naturally occurring hazardous material which would pose a threat to public health or the environment under unrestricted land use was indicated at the Site. Therefore, DTSC concurred with the conclusion of the PEA that further environmental investigation of the Site was not required and approved the PEA.						
Assembly District: 73 Senate District: 37 Permit Renewal Lead: Public Partici Spclst: Project Manager: JOHNSON ABRAHAM County: ORANGE Latitude: 33.7025593 Longitude: -117.782529 Acres: 0.62 ACRES Supervisor: SHAHIR HADDAD						

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 25-30%
Summary Link: https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=60001920

Completed Activities

Title: Preliminary Endangerment Assessment Tech Memo
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001920&doc_id=60336978
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Preliminary Endangerment Assessment Tech Memo
Date Completed: 12/4/2013
Comments:

Title: Preliminary Environmental Assessment Report
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001920&doc_id=60336980
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Preliminary Endangerment Assessment Report
Date Completed: 3/18/2014
Comments:

Title: EOA
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=60001920&enforcement_id=60335560
Area Name:
Area Link:
Sub Area:
Sub Area Link:
Document Type: Environmental Oversight Agreement
Date Completed: 9/17/2013
Comments: Fully executed EOA sent (FedEx) to District.

34	1 of 2	E	0.96 / 5,044.90	235.08 / 76	WOODBURY (AREA 9) ELEMENTARY SCHOOL JEFFREY ROAD/BRYAN AVENUE IRVINE CA 92620	SCH
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Estor/EPA ID:	30010020	Acres:	10 ACRES
Nat Priority List:	NO	Supervisor:	SHAHIR HADDAD
Census Tract:	6059052418	County:	ORANGE
Permit Renewal Lead:		Latitude:	33.6981
Project Manager:	SHAHIR HADDAD	Longitude:	-117.7511
Site Code:	404571		
Cleanup Status:	NO FURTHER ACTION AS OF 6/6/2005		
Cleanup Oversight Agencies:	DTSC - LEAD AGENCY		
Assembly District:	73		
Senate District:	37		
School District:	IRVINE UNIFIED SCHOOL DISTRICT		
Office:	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH		
Public Participatn Spclst:			
Special Program:			
Funding:	SCHOOL DISTRICT		
Site Type:	SCHOOL		
APN:	NONE SPECIFIED		
Past Use that Caused Contam:	AGRICULTURAL - ROW CROPS		
Potential Media Affected:	SOIL		
Potential Contamin of Concern:			

ARSENIC
CHLORDANE

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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DDD
DDE
DDT

SITE HISTORY:

Cover crop production until the 1960s, citrus orchards from the 1960's to approximately 1994 and row crops from approximately 1994 until recently.

Status: NO FURTHER ACTION
Program Type: SCHOOL EVALUATION
CalEnviroScreen Score: 35-40%
Summary Link: https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=30010020

Completed Activities

Title: Environmental Oversight Agreement
Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30010020&enforcement_id=6003201

Area Name:

Area Link:

Sub Area:

Sub Area Link:

Document Type: Environmental Oversight Agreement

Date Completed: 10/21/2004

Comments:

Title: * Site Visit - Site Inspections/visit

Title Link:

Area Name:

Area Link:

Sub Area:

Sub Area Link:

Document Type: Site Inspections/Visit (Non LUR)

Date Completed: 3/2/2005

Comments:

Title: * Workplan

Title Link:

Area Name:

Area Link:

Sub Area:

Sub Area Link:

Document Type: * Workplan

Date Completed: 2/9/2005

Comments:

Title: Preliminary Endangerment Assessment Report

Title Link: https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30010020&doc_id=6003203

Area Name:

Area Link:

Sub Area:

Sub Area Link:

Document Type: Preliminary Endangerment Assessment Report

Date Completed: 6/6/2005

Comments:

34	2 of 2	E	0.96 / 5,044.90	235.08 / 76	WOODBURY (AREA 9) ELEMENTARY SCHOOL JEFFREY ROAD/BRYAN AVENUE IRVINE CA 92620	ENVIROSTOR
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Estor/EPA ID: 30010020
Site Code: 404571
Nat Priority List: NO
APN: NONE SPECIFIED
Census Tract: 6059052418
Site Type: SCHOOL

Assembly District: 73
Senate District: 37
Permit Renewal Lead:
Public Partici Spclst:
Project Manager: SHAHIR HADDAD
County: ORANGE

Map Key	Number of Records	Direction	Distance (mi/ft)	Elev/Diff (ft)	Site	DB
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Address Description:	JEFFREY ROAD/BRYAN AVENUE	Latitude:	33.6981
Office:	SOUTHERN CALIFORNIA SCHOOLS & BROWNFIELDS OUTREACH	Longitude:	-117.7511
Special Program:		Acres:	10 ACRES
Funding:	SCHOOL DISTRICT	Supervisor:	SHAHIR HADDAD
Cleanup Status:	NO FURTHER ACTION AS OF 6/6/2005		
Cleanup Oversight Agencies:	DTSC - LEAD AGENCY		
School District:	IRVINE UNIFIED SCHOOL DISTRICT		
Past Use that Caused Contam:	AGRICULTURAL - ROW CROPS		
Potential Media Affected:	SOIL		
Potential Contaminant of Concern:			

ARSENIC
CHLORDANE
DDD
DDE
DDT

Site History:

Cover crop production until the 1960s, citrus orchards from the 1960's to approximately 1994 and row crops from approximately 1994 until recently.

Status:	NO FURTHER ACTION
Program Type:	SCHOOL EVALUATION
CalEnviroScreen Score:	35-40%
Summary Link:	https://www.envirostor.dtsc.ca.gov/public/profile_report?global_id=30010020

Completed Activities

Title:	Preliminary Endangerment Assessment Report
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30010020&doc_id=6003203
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Preliminary Endangerment Assessment Report
Date Completed:	6/6/2005
Comments:	

Title:	Environmental Oversight Agreement
Title Link:	https://www.envirostor.dtsc.ca.gov/public/final_documents2?global_id=30010020&enforcement_id=6003201
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Environmental Oversight Agreement
Date Completed:	10/21/2004
Comments:	

Title:	* Site Visit - Site Inspections/visit
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	Site Inspections/Visit (Non LUR)
Date Completed:	3/2/2005
Comments:	

Title:	* Workplan
Title Link:	
Area Name:	
Area Link:	
Sub Area:	
Sub Area Link:	
Document Type:	* Workplan
Date Completed:	2/9/2005

<i>Map Key</i>	<i>Number of Records</i>	<i>Direction</i>	<i>Distance (mi/ft)</i>	<i>Elev/Diff (ft)</i>	<i>Site</i>	<i>DB</i>
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Comments:

Unplottable Summary

Total: 0 Unplottable sites

DB	Company Name/Site Name	Address	City	Zip	ERIS ID
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No unplottable records were found that may be relevant for the search criteria.

Unplottable Report

No unplottable records were found that may be relevant for the search criteria.

Appendix: Database Descriptions

Environmental Risk Information Services (ERIS) can search the following databases. The extent of historical information varies with each database and current information is determined by what is publicly available to ERIS at the time of update. ERIS updates databases as set out in ASTM Standard E1527-13 and E1527-21, Section 8.1.8 Sources of Standard Source Information:

"Government information from nongovernmental sources may be considered current if the source updates the information at least every 90 days, or, for information that is updated less frequently than quarterly by the government agency, within 90 days of the date the government agency makes the information available to the public."

Standard Environmental Record Sources

Federal

National Priority List:

NPL

Sites on the United States Environmental Protection Agency (EPA)'s National Priorities List of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. The NPL, which EPA is required to update at least once a year, is based primarily on the score a site receives from EPA's Hazard Ranking System. A site must be on the NPL to receive money from the Superfund Trust Fund for remedial action. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Oct 26, 2023

National Priority List - Proposed:

PROPOSED NPL

Sites proposed by the United States Environmental Protection Agency (EPA), the state agency, or concerned citizens for addition to the National Priorities List (NPL) due to contamination by hazardous waste and identified by the EPA as a candidate for cleanup because it poses a risk to human health and/or the environment. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Oct 26, 2023

Deleted NPL:

DELETED NPL

Sites deleted from the United States Environmental Protection Agency (EPA)'s National Priorities List. 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. Sites are represented by boundaries where available in the EPA Superfund Site Boundaries maintained by the Shared Enterprise Geodata and Services (SEGS). Site boundaries represent the footprint of a whole site, the sum of all of the Operable Units and the current understanding of the full extent of contamination; for Federal Facility sites, the total site polygon may be the Facility boundary. Where there is no polygon boundary data available for a given site, the site is represented as a point.

Government Publication Date: Oct 26, 2023

SEMS List 8R Active Site Inventory:

SEMS

The U.S. Environmental Protection Agency's (EPA) Superfund Program has deployed the Superfund Enterprise Management System (SEMS), which integrates multiple legacy systems into a comprehensive tracking and reporting tool. This inventory contains active sites evaluated by the Superfund program that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The Active Site Inventory Report displays site and location information at active SEMS sites. An active site is one at which site assessment, removal, remedial, enforcement, cost recovery, or oversight activities are being planned or conducted. This data includes SEMS sites from the List 8R Active file as well as applicable sites from the SEMS GIS/REST file layer obtained from EPA's Facility Registry Service.

Government Publication Date: Jan 26, 2024

SEMS List 8R Archive Sites:

SEMS ARCHIVE

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System (SEMS) Archived Site Inventory displays site and location information at sites archived from SEMS. An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. This data includes sites from the List 8R Archived site file.

Government Publication Date: Jan 26, 2024

Inventory of Open Dumps, June 1985:

ODI

The Resource Conservation and Recovery Act (RCRA) provides for publication of an inventory of open dumps. The Act defines "open dumps" as facilities which do not comply with EPA's "Criteria for Classification of Solid Waste Disposal Facilities and Practices" (40 CFR 257).

Government Publication Date: Jun 1985

Comprehensive Environmental Response, Compensation and Liability Information System -

CERCLIS

CERCLIS:

Superfund is a program administered by the United States Environmental Protection Agency (EPA) to locate, investigate, and clean up the worst hazardous waste sites throughout the United States. CERCLIS is a database of potential and confirmed hazardous waste sites at which the EPA Superfund program has some involvement. It contains sites that are either proposed to be or are on the National Priorities List (NPL) as well as sites that are in the screening and assessment phase for possible inclusion on the NPL. The EPA administers the Superfund program in cooperation with individual states and tribal governments; this database is made available by the EPA.

Government Publication Date: Oct 25, 2013

EPA Report on the Status of Open Dumps on Indian Lands:

IODI

Public Law 103-399, The Indian Lands Open Dump Cleanup Act of 1994, enacted October 22, 1994, identified congressional concerns that solid waste open dump sites located on American Indian or Alaska Native (AI/AN) lands threaten the health and safety of residents of those lands and contiguous areas. The purpose of the Act is to identify the location of open dumps on Indian lands, assess the relative health and environment hazards posed by those sites, and provide financial and technical assistance to Indian tribal governments to close such dumps in compliance with Federal standards and regulations or standards promulgated by Indian Tribal governments or Alaska Native entities.

Government Publication Date: Dec 31, 1998

CERCLIS - No Further Remedial Action Planned:

CERCLIS NFRAP

An archived site is one at which EPA has determined that assessment has been completed and no further remedial action is planned under the Superfund program at this time. The Archive designation means 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 this site on the National Priorities List (NPL). This 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 a potential NPL site.

Government Publication Date: Oct 25, 2013

CERCLIS Liens:

CERCLIS LIENS

A Federal Superfund lien exists at any property where EPA has incurred Superfund costs to address contamination ("Superfund site") and has provided notice of liability to the property owner. A Federal CERCLA ("Superfund") lien can exist by operation of law at any site or property at which EPA has spent Superfund monies. This database is made available by the United States Environmental Protection Agency (EPA). This database was provided by the United States Environmental Protection Agency (EPA). Refer to SEMS LIEN as the current data source for Superfund Liens.

Government Publication Date: Jan 30, 2014

RCRA CORRACTS-Corrective Action:

RCRA CORRACTS

RCRA Info is the U.S. Environmental Protection Agency's (EPA) 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. At these sites, the Corrective Action Program ensures that cleanups occur. EPA and state regulators work with facilities and communities to design remedies based on the contamination, geology, and anticipated use unique to each site.

Government Publication Date: Jan 1, 2024

RCRA non-CORRACTS TSD Facilities:

RCRA TSD

RCRA Info is the U.S. Environmental Protection Agency's (EPA) 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. This database includes Non-Corrective Action sites that have indicated engagement in the treatment, storage, or disposal of hazardous waste which requires a RCRA hazardous waste permit.

Government Publication Date: Jan 1, 2024

RCRA Generator List:

RCRA LQG

RCRA Info is the U.S. Environmental Protection Agency's (EPA) 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Large Quantity Generators (LQGs) generate 1,000 kilograms per month or more of hazardous waste or more than one kilogram per month of acutely hazardous waste.

Government Publication Date: Jan 1, 2024

RCRA Small Quantity Generators List:

RCRA SQG

RCRA Info is the U.S. Environmental Protection Agency's (EPA) 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Small Quantity Generators (SQGs) generate more than 100 kilograms, but less than 1,000 kilograms, of hazardous waste per month.

Government Publication Date: Jan 1, 2024

RCRA Very Small Quantity Generators List:

RCRA VSQG

RCRA Info is the U.S. Environmental Protection Agency's (EPA) 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. A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Very Small Quantity Generators (VSQG) generate 100 kilograms or less per month of hazardous waste, or one kilogram or less per month of acutely hazardous waste. Additionally, VSQG may not accumulate more than 1,000 kilograms of hazardous waste at any time.

Government Publication Date: Jan 1, 2024

RCRA Non-Generators:

RCRA NON GEN

RCRA Info is the U.S. Environmental Protection Agency's (EPA) 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. RCRA Info replaces the data recording and reporting abilities of the Resource Conservation and Recovery Information System (RCRIS) and the Biennial Reporting System (BRS). A hazardous waste generator is any person or site whose processes and actions create hazardous waste (see 40 CFR 260.10). Non-Generators do not presently generate hazardous waste.

Government Publication Date: Jan 1, 2024

RCRA Sites with Controls:

RCRA CONTROLS

List of Resource Conservation and Recovery Act (RCRA) facilities with institutional controls in place. RCRA gives the U.S. Environmental Protection Agency (EPA) the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous solid wastes. The 1986 amendments to RCRA enabled EPA to address environmental problems that could result from underground tanks storing petroleum and other hazardous substances.

Government Publication Date: Jan 1, 2024

Federal Engineering Controls-ECs:

FED ENG

List of Engineering controls (ECs) made available by the United States Environmental Protection Agency (EPA). ECs encompass a variety of engineered and constructed physical barriers (e.g., soil capping, sub-surface venting systems, mitigation barriers, fences) to contain and/or prevent exposure to contamination on a property. The EC listing includes remedy component data from Superfund decision documents for applicable sites on the final or deleted on the National Priorities List (NPL); and sites with a Superfund Alternative Approach (SAA) Agreement in place. The only sites included that are not on the NPL; proposed for NPL; or removed from proposed NPL, are those with an SAA Agreement in place.

Government Publication Date: Feb 29, 2024

Federal Institutional Controls-ICs:

FED INST

List of Institutional controls (ICs) made available by the United States Environmental Protection Agency (EPA). ICs are non-engineered instruments, such as administrative and legal controls, that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy. Although it is EPA's expectation that treatment or engineering controls will be used to address principal threat wastes and that groundwater will be returned to its beneficial use whenever practicable, ICs play an important role in site remedies because they reduce exposure to contamination by limiting land or resource use and guide human behavior at a site. The IC listing includes remedy component data from Superfund decision documents for applicable sites on the final or deleted on the National Priorities List (NPL); and sites with a Superfund Alternative Approach (SAA) Agreement in place. The only sites included that are not on the NPL; proposed for NPL; or removed from proposed NPL, are those with an SAA Agreement in place.

Government Publication Date: Feb 29, 2024

Land Use Control Information System:

LUCIS

The LUCIS database is maintained by the U.S. Department of the Navy and contains information for former Base Realignment and Closure (BRAC) properties across the United States.

Government Publication Date: Sep 1, 2006

Institutional Control Boundaries at NPL sites:

NPL IC

Boundaries of Institutional Control areas at sites on the United States Environmental Protection Agency (EPA)'s National Priorities List, or Proposed or Deleted, made available by the EPA's Shared Enterprise Geodata and Services (SEGS). United States Environmental Protection Agency (EPA)'s National Priorities List of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term remedial action under the Superfund program. Institutional controls are non-engineered instruments such as administrative and legal controls that help minimize the potential for human exposure to contamination and/or protect the integrity of the remedy.

Government Publication Date: Oct 26, 2023

Emergency Response Notification System:

ERNS 1982 TO 1986

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1982-1986

Emergency Response Notification System:

ERNS 1987 TO 1989

Database of oil and hazardous substances spill reports controlled by the National Response Center. The primary function of the National Response Center is to serve as the sole national point of contact for reporting oil, chemical, radiological, biological, and etiological discharges into the environment anywhere in the United States and its territories.

Government Publication Date: 1987-1989

Emergency Response Notification System:

ERNS

Database of oil and hazardous substances spill reports made available by the United States Coast Guard National Response Center (NRC). The NRC fields initial reports for pollution and railroad incidents and forwards that information to appropriate federal/state agencies for response. These data contain initial incident data that has not been validated or investigated by a federal/state response agency.

Government Publication Date: Feb 20, 2024

The Assessment, Cleanup and Redevelopment Exchange System (ACRES) Brownfield Database:

FED BROWNFIELDS

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 protects the environment, reduces blight, and takes development pressures off greenspaces and working lands. This data is provided by the United States Environmental Protection Agency (EPA) and includes Brownfield sites from the Cleanups in My Community (CIMC) web application.

Government Publication Date: Feb 7, 2024

FEMA Underground Storage Tank Listing:

FEMA UST

The Federal Emergency Management Agency (FEMA) of the Department of Homeland Security maintains a list of FEMA owned underground storage tanks.

Government Publication Date: Dec 31, 2017

Facility Response Plan:

FRP

This listing contains facilities that have submitted Facility Response Plans (FRPs) to the U.S. Environmental Protection Agency (EPA). Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit FRPs. Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments. This listing includes FRP facilities from an applicable EPA FOIA file and Homeland Infrastructure Foundation-Level Data (HIFLD) data file.

Government Publication Date: May 2, 2023

Delisted Facility Response Plans:

DELISTED FRP

Facilities that once appeared in - and have since been removed from - the list of facilities that have submitted Facility Response Plans (FRP) to EPA. Facilities that could reasonably be expected to cause "substantial harm" to the environment by discharging oil into or on navigable waters are required to prepare and submit Facility Response Plans (FRPs). Harm is determined based on total oil storage capacity, secondary containment and age of tanks, oil transfer activities, history of discharges, proximity to a public drinking water intake or sensitive environments.

Government Publication Date: May 2, 2023

Historical Gas Stations:

HIST GAS STATIONS

This historic directory of service stations is provided by the Cities Service Company. The directory includes Cities Service filling stations that were located throughout the United States in 1930.

Government Publication Date: Jul 1, 1930

Petroleum Refineries:

REFN

List of petroleum refineries from the U.S. Energy Information Administration (EIA) Refinery Capacity Report. Includes operating and idle petroleum refineries (including new refineries under construction) and refineries shut down during the previous year located in the 50 States, the District of Columbia, Puerto Rico, the Virgin Islands, Guam, and other U.S. possessions. Survey locations adjusted using public data.

Government Publication Date: Sep 20, 2023

Petroleum Product and Crude Oil Rail Terminals:

BULK TERMINAL

A list of petroleum product and crude oil rail terminals from the U.S. Energy Information Administration (EIA), as well as petroleum terminals sourced from the Federal Communications Commission Data hosted by the Homeland Infrastructure Foundation-Level Database. Data includes operable bulk petroleum product terminals with a total bulk shell storage capacity of 50,000 barrels or more, and/or the ability to receive volumes from tanker, barge, or pipeline; also rail terminals handling the loading and unloading of crude oil with activity between 2017 and 2018. EIA petroleum product terminal data comes from the EIA-815 Bulk Terminal and Blender Report, which includes working, shell in operation, and shell idle for several major product groupings.

Government Publication Date: Sep 22, 2023

LIEN on Property:

SEMS LIEN

The U.S. Environmental Protection Agency's (EPA) Superfund Enterprise Management System (SEMS) provides Lien details on applicable properties, such as the Superfund lien on property activity, the lien property information, and the parties associated with the lien.

Government Publication Date: Jan 26, 2024

Superfund Decision Documents:

SUPERFUND ROD

This database contains a list of decision documents for Superfund sites. Decision documents serve to provide the reasoning for the choice of (or) changes to a Superfund Site cleanup plan. The decision documents include completed Records of Decision (ROD), ROD Amendments, Explanations of Significant Differences (ESD) for active and archived sites stored in the Superfund Enterprise Management System (SEMS), along with other associated memos and files. This information is maintained and made available by the U.S. Environmental Protection Agency.

Government Publication Date: Dec 26, 2023

Formerly Utilized Sites Remedial Action Program:

DOE FUSRAP

The U.S. Department of Energy (DOE) established the Formerly Utilized Sites Remedial Action Program (FUSRAP) in 1974 to remediate sites where radioactive contamination remained from the Manhattan Project and early U.S. Atomic Energy Commission (AEC) operations. The DOE Office of Legacy Management (LM) established long-term surveillance and maintenance (LTS&M) requirements for remediated FUSRAP sites. DOE evaluates the final site conditions of a remediated site on the basis of risk for different future uses. DOE then confirms that LTS&M requirements will maintain protectiveness.

Government Publication Date: Mar 4, 2017

State**State Response Sites:**

RESPONSE

A list of identified confirmed release sites where the Department of Toxic Substances Control (DTSC) is involved in remediation, either in a lead or oversight capacity. These confirmed release sites are generally high-priority and high potential risk. This database is state equivalent NPL.

Government Publication Date: Feb 15, 2024

EnviroStor Database:

ENVIROSTOR

The EnviroStor Data Management System is made available by the Department of Toxic Substances Control (DTSC). Includes Corrective Action sites, Tiered Permit sites, Historical Sites and Evaluation/Investigation sites. This database is state equivalent CERCLIS.

Government Publication Date: Feb 15, 2024

Delisted State Response Sites:

DELISTED ENVS

Sites removed from the list of State Response Sites made available by the EnviroStor Data Management System, Department of Toxic Substances Control (DTSC).

Government Publication Date: Feb 15, 2024

Solid Waste Information System (SWIS):

SWF/LF

The Solid Waste Information System (SWIS) database made available by the Department of Resources Recycling and Recovery (CalRecycle) contains information on solid waste facilities, operations, and disposal sites throughout the State of California. The types of facilities found in this database include landfills, transfer stations, material recovery facilities, composting sites, transformation facilities, waste tire sites, and closed disposal sites.

Government Publication Date: Feb 15, 2024

Solid Waste Disposal Sites with Waste Constituents Above Hazardous Waste Levels:

SWRCB SWF

This is a list of solid waste disposal sites identified by California State Water Resources Control Board with waste constituents above hazardous waste levels outside the waste management unit.

Government Publication Date: Sep 20, 2006

Waste Management Unit Database:

WMUD

The Waste Management Unit Database System tracks and inventories waste management units. CCR Title 27 contains criteria stating that Waste Management Units are classified according to their ability to contain wastes. Containment shall be determined by geology, hydrology, topography, climatology, and other factors relating to the ability of the Unit to protect water quality. Water Code Section 13273.1 requires that operators submit a water quality solid waste assessment test (SWAT) report to address leak status. The WMUDS was last updated by the State Water Resources control board in 2000.

Government Publication Date: Jan 1, 2000

EnviroStor Hazardous Waste Facilities:

HWP

A list of hazardous waste facilities including permitted, post-closure and historical facilities found in the Department of Toxic Substances Control (DTSC) EnviroStor database.

Government Publication Date: Feb 15, 2024

Sites Listed in the Solid Waste Assessment Test (SWAT) Program Report:

SWAT

In a 1993 Memorandum of Understanding, the State Water Resources Control Board (SWRCB) agreed to submit a comprehensive report on the Solid Waste Assessment Test (SWAT) Program to the California Integrated Waste Management Board (CIWMB). This report summarizes the work completed to date on the SWAT Program, and addresses both the impacts that leakage from solid waste disposal sites (SWDS) may have upon waters of the State and the actions taken to address such leakage.

Government Publication Date: Dec 31, 1995

Construction and Demolition Debris Recyclers:

C&D DEBRIS RECY

This listing of Construction and Demolition Debris Recyclers is maintained by the California Integrated Waste Management Board-common C&D materials include lumber, drywall, metals, masonry (brick, concrete, etc.), carpet, plastic, pipe, rocks, dirt, paper, cardboard, or green waste related to land development.

Government Publication Date: Jun 20, 2018

Recycling Centers:

RECYCLING

This list of Certified Recycling Centers that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Jan 17, 2024

Listing of Certified Processors:

PROCESSORS

This list of Certified Processors that are operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Jan 17, 2024

Listing of Certified Dropoff, Collection, and Community Service Programs:

CONTAINER RECY

This list of Certified Dropoff, Collection, and Community Service Programs (non-buyback) operating under the state of California's Beverage Container Recycling Program is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Jan 22, 2024

Land Disposal Sites:

LDS

Land Disposal Sites in GeoTracker, the State Water Resources Control Board (SWRCB)'s data management system. The Land Disposal program regulates of waste discharge to land for treatment, storage and disposal in waste management units. Waste management units include waste piles, surface impoundments, and landfills.

Government Publication Date: Nov 30, 2023

Leaking Underground Fuel Tank Reports:

LUST

List of Leaking Underground Storage Tanks within the Cleanup Sites data in GeoTracker database. GeoTracker is the State Water Resources Control Board's (SWRCB) data management system for managing sites that impact groundwater, especially those that require groundwater cleanup (Underground Storage Tanks, Department of Defense and Site Cleanup Program) as well as permitted facilities such as operating Underground Storage Tanks. The Leak Prevention Program that overlooks LUST sites is the SWRCB in California's Environmental Protection Agency.

Government Publication Date: Nov 30, 2023

Delisted Leaking Storage Tanks:

DELISTED LST

List of Leaking Underground Storage Tanks (LUST) cleanup sites removed from GeoTracker, the State Water Resources Control Board (SWRCB)'s database system, as well as sites removed from the SWRCB's list of UST Case closures.

Government Publication Date: Nov 30, 2023

Permitted Underground Storage Tank (UST) in GeoTracker:

UST

List of Permitted Underground Storage Tank (UST) sites made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA).

Government Publication Date: Feb 15, 2024

Proposed Closure of Underground Storage Tank Cases:

UST CLOSURE

This listing includes Proposed Closure of Underground Storage Tank (UST) Cases which are being considered for closure by either the State Water Resources Control Board at a Future Board Meeting or the Executive Director that have been posted for a 60-day public comment period, and Closure of UST Cases with Closure Denials and Approved Orders. The lists are provided by the California Water Boards.

Government Publication Date: Dec 22, 2023

Historical Hazardous Substance Storage Information Database:

HHSS

The Historical Hazardous Substance Storage database contains information collected in the 1980s from facilities that stored hazardous substances. The information was originally collected on paper forms, was later transferred to microfiche, and recently indexed as a searchable database. When using this database, please be aware that it is based upon self-reported information submitted by facilities which has not been independently verified. It is unlikely that every facility responded to the survey and the database should not be expected to be a complete inventory of all facilities that were operating at that time. This database is maintained by the California State Water Resources Control Board's (SWRCB) Geotracker.

Government Publication Date: Aug 27, 2015

Statewide Environmental Evaluation and Planning System:

UST SWEEPS

The Statewide Environmental Evaluation and Planning System (SWEEPS) is a historical listing of active and inactive underground storage tanks made available by the California State Water Resources Control Board (SWRCB).

Government Publication Date: Oct 1, 1994

Aboveground Storage Tanks:

AST

A statewide list from 2009 of aboveground storage tanks (ASTs) made available by the Cal FIRE Office of the State Fire Marshal (OSFM). This list is no longer maintained or updated by the Cal FIRE OSFM.

Government Publication Date: Aug 31, 2009

SWRCB Historical Aboveground Storage Tanks:

AST SWRCB

A list of aboveground storage tanks made available by the California State Water Resources Control Board (SWRCB). Effective January 1, 2008, the Certified Unified Program Agencies (CUPAs) are vested with the responsibility and authority to implement the Aboveground Petroleum Storage Act (APSA).

Government Publication Date: Dec 1, 2007

Oil and Gas Facility Tanks:

TANK OIL GAS

Locations of oil and gas tanks that fall under the jurisdiction of the Geologic Energy Management Division of the California Department of Conservation (CalGEM) (CCR 1760). CalGEM was formerly the Division of Oil, Gas, and Geothermal Resources (DOGGR).

Government Publication Date: Jan 24, 2024

Delisted Storage Tanks:

DELISTED TNK

This database contains a list of storage tank sites that were removed by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency (EPA) and the Cal FIRE Office of State Fire Marshal (OSFM).

Government Publication Date: Mar 26, 2024

California Environmental Reporting System (CERS) Tanks:

CERS TANK

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. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Jan 17, 2024

Delisted California Environmental Reporting System (CERS) Tanks:

DELISTED CTNK

This database contains a list of Aboveground Petroleum Storage and Underground Storage Tank sites that were removed from in the California Environmental Protection Agency (CalEPA) Regulated Site Portal.

Government Publication Date: Jan 17, 2024

Historical Hazardous Substance Storage Container Information - Facility Summary:

HIST TANK

The State Water Resources Control Board maintained the Hazardous Substance Storage Containers listing and inventory in the 1980s. This facility summary lists historic tank sites where the following container types were present: farm motor vehicle fuel tanks; waste tanks; sumps; pits; ponds, lagoons, and others; and all other product tanks. This set, published in May 1988, lists facility and owner information, as well as the number of containers. This data is historic and will not be updated.

Government Publication Date: May 27, 1988

Site Mitigation and Brownfields Reuse Program Facility Sites with Land Use Restrictions:

LUR

The Department of Toxic Substances Control (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 land use restrictions that are active. Some sites have multiple land use restrictions.

Government Publication Date: Feb 15, 2024

CALSITES Database:

CALSITES

This historical database was maintained by the Department of Toxic Substance Control (DTSC) for more than a decade. CALSITES contains information on Brownfield properties with confirmed or potential hazardous contamination. In 2006, DTSC introduced EnviroStor as the latest Brownfields site database.

Government Publication Date: May 1, 2004

Hazardous Waste Management Program Facility Sites with Deed / Land Use Restrictions:

HLUR

The Department of Toxic Substances Control (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.

Government Publication Date: Feb 18, 2021

Deed Restrictions and Land Use Restrictions:

DEED

List of Deed Restrictions, Land Use Restrictions and Covenants in GeoTracker made available by the State Water Resources Control Board (SWRCB) in California's Environmental Protection Agency. A deed restriction (land use covenant) may be required to facilitate the remediation of past environmental contamination and to protect human health and the environment by reducing the risk of exposure to residual hazardous materials.

Government Publication Date: Nov 30, 2023

Voluntary Cleanup Program:

VCP

List of sites in the Voluntary Cleanup Program made available by the Department of Toxic Substances and Control (DTSC). The Voluntary Cleanup Program was designed to respond to lower priority sites. Under the Voluntary Cleanup Program, DTSC enters site-specific agreements with project proponents for DTSC oversight of site assessment, investigation, and/or removal or remediation activities, and the project proponents agree to pay DTSC's reasonable costs for those services.

Government Publication Date: Feb 15, 2024

GeoTracker Cleanup Program Sites:

CLEANUP SITES

A list of Cleanup Program sites in the state of California made available by The State Water Resources Control Board (SWRCB) of the California Environmental Protection Agency (EPA). SWRCB tracks leaking underground storage tank cleanups as well as other water board cleanups.

Government Publication Date: Nov 30, 2023

Delisted Cleanup Program Sites:

DELISTED CLEANUP

A list of Cleanup Program sites which were once included - and have since been removed from - the list of Cleanup Program Sites in GeoTracker. GeoTracker is the State Water Resource Control Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater.

Government Publication Date: Nov 30, 2023

Delisted County Records:

DELISTED COUNTY

Records removed from county or CUPA databases. Records may be removed from the county lists made available by the respective county departments because they are inactive, or because they have been deemed to be below reportable thresholds.

Government Publication Date: Mar 20, 2024

Tribal

Leaking Underground Storage Tanks on Tribal/Indian Lands:

INDIAN LUST

This list of leaking underground storage tanks (LUSTs) on Tribal/Indian Lands in Region 9, which includes California, is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Oct 25, 2023

Underground Storage Tanks on Tribal/Indian Lands:

INDIAN UST

This list of underground storage tanks (USTs) on Tribal/Indian Lands in Region 9, which includes California, is made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Oct 25, 2023

Delisted Tribal Leaking Storage Tanks:

DELISTED INDIAN LST

Leaking Underground Storage Tank (LUST) facilities which once appeared on - and have since been removed from - the Regional Tribal/Indian LUST lists made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Oct 25, 2023

Delisted Tribal Underground Storage Tanks:

DELISTED INDIAN UST

Underground Storage Tank (UST) facilities which once appeared on - and have since been removed from - the Regional Tribal/Indian UST lists made available by the United States Environmental Protection Agency (EPA).

Government Publication Date: Oct 25, 2023

County

Orange County - Industrial Cleanup Program Cases Listing:

ICP ORANGE

Orange County Health Care Agency's Environmental Health Division has an Industrial Cleanup (IC) program which oversees the voluntary cleanup of contaminated property. This is a list of cases (by city) which the IC program has overseen in the past, or is currently overseeing.

Government Publication Date: May 15, 2023

Orange County - LOP Lead Cases List:

LOP ORANGE

The Local Oversight Program of the County of Orange provides regulatory cleanup oversight for cleanup of leaking underground storage tanks (USTs). This dataset is provided by the Orange County Health Care Agency.

Government Publication Date: May 15, 2023

Orange County - Non-Petroleum Underground Storage Tank Cases:

NP/UT ORANGE

This list of open and closed non-petroleum underground storage tank cases is maintained by the Orange County Health Care Agency.

Government Publication Date: Oct 11, 2023

Orange County - Underground Storage Tanks Listing:

UST ORANGE

A list of registered Underground Storage Tank (UST) sites in Orange County. This list is made available by Orange County Health Care Agency (OCHCA), Environmental Health Division which oversees the underground storage tank inspection program in most of the cities of Orange County, with the exception of Anaheim, Fullerton, and Orange.

Government Publication Date: May 15, 2023

Orange County - Aboveground Petroleum Storage Tank Listing:

AST ORANGE

A list of Aboveground Petroleum Storage Tank (APST) facilities inspected by Orange County Certified Unified Program Agency (CUPA) Under the Aboveground Petroleum Storage Act (APSA). This list is made available by the Environmental Health Division of Orange County Health Care Agency.

Government Publication Date: May 15, 2023

Orange County - Anaheim City UST Cleanup Cases:

UST CLP ANAHEIM

A list of UST Cleanup Cases in the City of Anaheim in Orange County. As part of its Groundwater Protection Program, the City of Anaheim managed the UST Cleanup Oversight Program from April 1991 to June 2014. This list is published by the City of Anaheim Underground Storage Tank Cleanup Program.

Government Publication Date: May 26, 2015

Orange County - Anaheim City UST List:

UST ANAHEIM

A list of Underground Storage Tanks in Anaheim City, Orange County. This list is made available by Anaheim Fire & Rescue Department.

Government Publication Date: Oct 26, 2023

Orange County - Anaheim City AST List:

AST ANAHEIM

List of Aboveground Storage Tanks (ASTs) in Anaheim City, Orange County made available by Anaheim Fire & Rescue.

Government Publication Date: Oct 26, 2023

Additional Environmental Record Sources**Federal****PFAS Greenhouse Gas Emissions Data:**

PFAS GHG

The U.S. Environmental Protection Agency's Greenhouse Gas Reporting Program (GHGRP) collects Greenhouse Gas (GHG) data from large emitting facilities (25,000 metric tons of carbon dioxide equivalent (CO₂e) per year), and suppliers of fossil fuels and industrial gases that results in GHG emissions when used. Includes GHG emissions data for facilities that emit or have emitted since 2010 chemicals identified in EPA's CompTox Chemicals Dashboard list of PFAS without explicit structures and list of PFAS structures by DSSTox. PFAS emissions data has been identified for facilities engaged in the following industrial processes: Aluminum Production (GHGRP Subpart F), HCFC-22 Production and HFC-23 Destruction (Subpart O), Electronics Manufacturing (Subpart I), Fluorinated Gas Production (Subpart L), Magnesium Production (Subpart T), Electrical Transmission and Distribution Equipment Use (Subpart DD), and Manufacture of Electric Transmission and Distribution Equipment (Subpart SS). Over time, other industrial processes with required GHGRP reporting may include PFAS emissions data and the list of reportable gases may change over time.

Government Publication Date: Nov 15, 2023

Facility Registry Service/Facility Index:

FINDS/FRS

The Facility Registry Service (FRS) is a centrally managed database that identifies facilities, sites, or places subject to environmental regulations or of environmental interest. FRS creates high-quality, accurate, and authoritative facility identification records through rigorous verification and management procedures that incorporate information from program national systems, state master facility records, and data collected from EPA's Central Data Exchange registrations and data management personnel. This list is made available by the U.S. Environmental Protection Agency (EPA).

Government Publication Date: Feb 9, 2024

Toxics Release Inventory (TRI) Program:

TRIS

The U.S. Environmental Protection Agency's Toxics Release Inventory (TRI) is a database containing data on disposal or other releases of toxic chemicals from U.S. facilities and information about how facilities manage those chemicals through recycling, energy recovery, and treatment. There are currently 770 individually listed chemicals and 33 chemical categories covered by the TRI Program. Facilities that manufacture, process or otherwise use these chemicals in amounts above established levels must submit annual reporting forms for each chemical. Note that the TRI chemical list does not include all toxic chemicals used in the U.S. One of TRI's primary purposes is to inform communities about toxic chemical releases to the environment. This database includes TRI Reporting Data for calendar years 1987 through 2021 and Preliminary Data for 2022.

Government Publication Date: Sep 20, 2023

PFOA/PFOS Contaminated Sites:

PFAS NPL

This list of Superfund Sites with Per- and Polyfluoroalkyl Substances (PFAS) detections is made available by the U.S. Environmental Protection Agency (EPA) in their PFAS Analytic Tools data, previously the list was obtained by EPA FOIA requests. EPA's Office of Land and Emergency Management and EPA Regional Offices maintain what is known about site investigations, contamination, and remedial actions under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) where PFAS is present in the environment. Limitations: Detections of PFAS at National Priorities List (NPL) sites do not mean that people are at risk from PFAS, are exposed to PFAS, or that the site is the source of the PFAS. The information in the Superfund NPL and Superfund Alternative Agreement (SAA) PFAS detection site list is years old and may not be accurate today. Site information such as site name, site ID, and location has been confirmed for accuracy; however, PFAS-related information such as media sampled, drinking water being above the health advisory, or mitigation efforts has not been verified. For Federal Facilities data, the other Federal agencies (OFA) are the lead agency for their data and provided them to EPA.

Government Publication Date: Mar 19, 2024

Federal Agency Locations with Known or Suspected PFAS Detections:

PFAS FED SITES

List of Federal agency locations with known or suspected detections of Per- and Polyfluoroalkyl Substances (PFAS), made available by the U.S. Environmental Protection Agency (EPA) in their PFAS Analytic Tools data. EPA outlines that these data are gathered from several federal entities, such as the Federal Superfund program, Department of Defense (DOD), National Aeronautics and Space Administration, Department of Transportation, and Department of Energy. The dates this data was extracted for the PFAS Analytic Tools range from March 2022 to September 2023. Sites on this list do not necessarily reflect the source/s of PFAS contamination and detections do not indicate level of risk or human exposure at the site. Agricultural notifications in this data are limited to DOD sites only. At this time, the EPA is aware that this list is not comprehensive of all Federal agencies.

Government Publication Date: Sep 5, 2023

SSEHRI PFAS Contamination Sites:

PFAS SSEHRI

This PFAS Contamination Site Tracker database is compiled by the Social Science Environmental Health Research Institute (SSEHRI) at Northeastern University. According to the SSEHRI, the database records qualitative and quantitative data from each known site of PFAS contamination, including timeline of discovery, sources, levels, health impacts, community response, and government response. The goal of this database is to compile information and support public understanding of the rapidly unfolding issue of PFAS contamination. All data presented was extracted from government websites, news articles, or publicly available documents, and this is cited in the tracker. Locations for the Known PFAS Contamination Sites are sourced from the PFAS Sites and Community Resources Map, credited to the Northeastern University's PFAS Project Lab, Silent Spring Institute, and the PFAS-REACH team. Disclaimer: The source conveys the data undergoes regular updates as new information becomes available, some sites may be missing and/or contain information that is incorrect or outdated, as well as their information represents all contamination sites SSEHRI is aware of, not all possible contamination sites. This data is not intended to be used for legal purposes. Access the following source link for the most current information: <https://pfasproject.com/pfas-sites-and-community-resources/>

Government Publication Date: May 19, 2023

National Response Center PFAS Spills:

ERNS PFAS

This Per- and Poly-Fluoroalkyl Substances (PFAS) Spills dataset is made available via the U.S. Environmental Protection Agency's (EPA) PFAS Analytic Tools. The National Response Center (NRC), operated by the U.S. Coast Guard, is the designated federal point of contact for reporting all oil, chemical, and other discharges into the environment, for the United States and its territories. This dataset contains NRC spill information from 1990 to the present that is restricted to records associated with PFAS and PFAS-containing materials. Incidents are filtered to include only records with a "Material Involved" or "Incident Description" related to Aqueous Film Forming Foam (AFFF). The keywords used to filter the data included "AFFF," "Fire Fighting Foam," "Aqueous Film Forming Foam," "Fire Suppressant Foam," "PFAS," "PERFL," "PFOA," "PFOS," and "Genx." Limitations: The data from the NRC website contains initial incident data that has not been validated or investigated by a federal/state response agency. Keyword searches may misidentify some incident reports that do not contain PFAS. This dataset should also not be considered to be exhaustive of all PFAS spills/release incidents.

Government Publication Date: Jan 24, 2024

PFAS NPDES Discharge Monitoring:

PFAS NPDES

This list of National Pollutant Discharge Elimination System (NPDES) permitted facilities with required monitoring for Per- and Polyfluoroalkyl (PFAS) Substances is made available via the U.S. Environmental Protection Agency (EPA)'s PFAS Analytic Tools. Any point-source wastewater discharger to waters of the United States must have a NPDES permit, which defines a set of parameters for pollutants and monitoring to ensure that the discharge does not degrade water quality or impair human health. This list includes NPDES permitted facilities associated with permits that monitor for Per- and Polyfluoroalkyl Substances (PFAS), limited to the years 2007 - present. EPA further advises the following regarding these data: currently, fewer than half of states have required PFAS monitoring for at least one of their permittees, and fewer states have established PFAS effluent limits for permittees. For states that may have required monitoring, some reporting and data transfer issues may exist on a state-by-state basis.

Government Publication Date: Feb 19, 2024

Perfluorinated Alkyl Substances (PFAS) from Toxic Release Inventory:

PFAS TRI

List of Toxics Release Inventory (TRI) facilities at which the reported chemical is a per- or polyfluoroalkyl (PFAS) substance included in the U.S. Environmental Protection Agency's (EPA) consolidated PFAS Master List of PFAS Substances. Encompasses Toxics Release Inventory records included in the EPA PFAS Analytic Tools. The EPA's TRI database currently tracks information on disposal or releases of 770 individually listed toxic chemicals and 33 chemical categories from thousands of U.S. facilities and details about how facilities manage those chemicals through recycling, energy recovery, and treatment. This listing includes TRI Reporting Data for calendar years 1987 through 2021 and Preliminary Data for 2022.

Perfluorinated Alkyl Substances (PFAS) Water Quality:

PFAS WATER

The Water Quality Portal (WQP) is a cooperative service sponsored by the United States Geological Survey (USGS), the Environmental Protection Agency (EPA), and the National Water Quality Monitoring Council (NWQMC). This listing includes records from the Water Quality Portal where the characteristic (environmental measurement) is in the Environmental Protection Agency (EPA)'s consolidated Master List of PFAS Substances.

Government Publication Date: Jul 20, 2020

PFAS TSCA Manufacture and Import Facilities:

PFAS TSCA

The U.S. Environmental Protection Agency (EPA) issued the Chemical Data Reporting (CDR) Rule under the Toxic Substances Control Act (TSCA) and requires chemical manufacturers and facilities that manufacture or import chemical substances to report data to EPA. This list is specific only to TSCA Manufacture and Import Facilities with reported per- and poly-fluoroalkyl (PFAS) substances. Data file is sourced from EPA's PFAS Analytic Tools TSCA dataset which includes CDR/Inventory Update Reporting data from 1998 up to 2020. Disclaimer: This data file includes production and importation data for chemicals identified in EPA's CompTox Chemicals Dashboard list of PFAS without explicit structures and list of PFAS structures in DSSTox. Note that some regulations have specific chemical structure requirements that define PFAS differently than the lists in EPA's CompTox Chemicals Dashboard. Reporting information on manufactured or imported chemical substance amounts should not be compared between facilities, as some companies claim Chemical Data Reporting Rule data fields for PFAS information as Confidential Business Information.

Government Publication Date: Jan 5, 2023

PFAS Waste Transfers from RCRA e-Manifest :

PFAS E-MANIFEST

This Per- and Poly-Fluoroalkyl Substances (PFAS) Waste Transfers dataset is made available via the U.S. Environmental Protection Agency's (EPA) PFAS Analytic Tools. Every shipment of hazardous waste in the U.S. must be accompanied by a shipment manifest, which is a critical component of the cradle-to-grave tracking of wastes mandated by the Resource Conservation and Recovery Act (RCRA). According to the EPA, currently no Federal Waste Code exists for any PFAS compounds. To work around the lack of PFAS waste codes in the RCRA database, EPA developed the PFAS Transfers dataset by mining e-Manifest records containing at least one of these common PFAS keywords: • PFAS • PFOA • PFOS • PERFL • AFFF • GENX • GEN-X (plus the Vermont state-specific waste codes). Limitations: Amount or concentration of PFAS being transferred cannot be determined from the manifest information. Keyword searches may misidentify some manifest records that do not contain PFAS. This dataset should also not be considered to be exhaustive of all PFAS waste transfers.

Government Publication Date: Feb 25, 2024

PFAS Industry Sectors:

PFAS IND

This Per- and Poly-Fluoroalkyl Substances (PFAS) Industry Sectors dataset is made available via the U.S. Environmental Protection Agency's (EPA) PFAS Analytic Tools. The EPA developed the dataset from various sources that show which industries may be handling PFAS including: EPA's Enforcement and Compliance History Online (ECHO) records restricted to potential PFAS-handling industry sectors; ECHO records for Fire Training Sites identified where fire-fighting foam may have been used in training exercises; and 14 CFR Part 139 Airports compiled from historic and current records from the FAA Airport Data and Information Portal. Since July 2006, all certificated Part 139 Airports are required to have fire-fighting foam onsite that meet certain military specifications, which to date have been fluorinated (Aqueous Film Forming Foam). Limitations: Inclusion in this dataset does not indicate that PFAS are being manufactured, processed, used, or released by the facility. Listed facilities potentially handle PFAS based on their industrial profile, but are unconfirmed by the EPA. Keyword searches in ECHO for Fire Training sites may misidentify some facilities and should not be considered to be an exhaustive list of fire training facilities in the U.S.

Government Publication Date: Dec 4, 2023

Hazardous Materials Information Reporting System:

HMIRS

The Hazardous Materials Incident Reporting System (HMIRS) database contains unintentional hazardous materials release information reported to the U.S. Department of Transportation, Pipeline and Hazardous Materials Safety Administration.

Government Publication Date: Nov 26, 2023

National Clandestine Drug Labs:

NCDL

The U.S. Department of Justice ("the Department"), Drug Enforcement Administration (DEA), provides this data 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.

Government Publication Date: Jul 26, 2023

Toxic Substances Control Act:

TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The CDR enables EPA to collect and publish information on the manufacturing, processing, and use of commercial chemical substances and mixtures (referred to hereafter as chemical substances) on the TSCA Chemical Substance Inventory (TSCA Inventory). This includes current information on chemical substance production volumes, manufacturing sites, and how the chemical substances are used. This information helps the Agency determine whether people or the environment are potentially exposed to reported chemical substances. EPA publishes submitted CDR data that is not Confidential Business Information (CBI).

Government Publication Date: Apr 11, 2019

Hist TSCA:

HIST TSCA

The Environmental Protection Agency (EPA) is amending the Toxic Substances Control Act (TSCA) section 8(a) Inventory Update Reporting (IUR) rule and changing its name to the Chemical Data Reporting (CDR) rule.

The 2006 IUR data summary report includes information about chemicals manufactured or imported in quantities of 25,000 pounds or more at a single site during calendar year 2005. In addition to the basic manufacturing information collected in previous reporting cycles, the 2006 cycle is the first time EPA collected information to characterize exposure during manufacturing, processing and use of organic chemicals. The 2006 cycle also is the first time manufacturers of inorganic chemicals were required to report basic manufacturing information.

Government Publication Date: Dec 31, 2006

FTTS Administrative Case Listing:

FTTS ADMIN

An administrative case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

FTTS Inspection Case Listing:

FTTS INSP

An inspection case listing from the Federal Insecticide, Fungicide, & Rodenticide Act (FIFRA) and Toxic Substances Control Act (TSCA), together known as FTTS. This database was obtained from the Environmental Protection Agency's (EPA) National Compliance Database (NCDB). The FTTS and NCDB was shut down in 2006.

Government Publication Date: Jan 19, 2007

Potentially Responsible Parties List:

PRP

Early in the site cleanup process, the U.S. Environmental Protection Agency (EPA) conducts a search to find the Potentially Responsible Parties (PRPs). The EPA looks for evidence to determine liability by matching wastes found at the site with parties that may have contributed wastes to the site. This listing contains PRPs, Noticed Parties, at sites in the EPA's Superfund Enterprise Management System (SEMS).

Government Publication Date: Jan 26, 2024

State Coalition for Remediation of Drycleaners Listing:

SCRD DRYCLEANER

The State Coalition for Remediation of Drycleaners (SCRD) was established in 1998, with support from the U.S. Environmental Protection Agency (EPA) Office of Superfund Remediation and Technology Innovation. Coalition members are states with mandated programs and funding for drycleaner site remediation. Current members are Alabama, Connecticut, Florida, Illinois, Kansas, Minnesota, Missouri, North Carolina, Oregon, South Carolina, Tennessee, Texas, and Wisconsin. Since 2017, the SCRD no longer maintains this data, refer to applicable state source data where available.

Government Publication Date: Nov 08, 2017

Integrated Compliance Information System (ICIS):

ICIS

The Integrated Compliance Information System (ICIS) database contains integrated enforcement and compliance information across most of U.S. Environmental Protection Agency's (EPA) programs. The vision for ICIS is to replace EPA's independent databases that contain enforcement data with a single repository for that information. Currently, ICIS contains all Federal Administrative and Judicial enforcement actions and a subset of the Permit Compliance System (PCS), which supports the National Pollutant Discharge Elimination System (NPDES). This information is maintained by the EPA Headquarters and at the Regional offices. A future release of ICIS will completely replace PCS and will integrate that information with Federal actions already in the system. ICIS also has the capability to track other activities that support compliance and enforcement programs, including incident tracking, compliance assistance, and compliance monitoring.

Government Publication Date: Aug 26, 2023

Drycleaner Facilities:

FED DRYCLEANERS

A list of drycleaner facilities from Enforcement and Compliance History Online (ECHO) data as made available by the U.S. Environmental Protection Agency (EPA), sourced from the ECHO Exporter file. The EPA tracks facilities that possess NAIC and SIC codes that classify businesses as drycleaner establishments.

Government Publication Date: Jan 20, 2024

Delisted Drycleaner Facilities:

DELISTED FED DRY

List of sites removed from the list of Drycleaner Facilities (sites in the EPA's Integrated Compliance Information System (ICIS) with NAIC or SIC codes identifying the business as a drycleaner establishment).

Government Publication Date: Jan 20, 2024

Formerly Used Defense Sites:

FUDS

Formerly Used Defense Sites (FUDS) are properties that were formerly owned by, leased to, or otherwise possessed by and under the jurisdiction of the Secretary of Defense prior to October 1986, where the Department of Defense (DOD) is responsible for an environmental restoration. The FUDS Annual Report to Congress (ARC) is published by the U.S. Army Corps of Engineers (USACE). This data is compiled from the USACE's Geospatial FUDS data layers and Homeland Infrastructure Foundation-Level Data (HIFLD) FUDS dataset which applies to the Fiscal Year 2021 FUDS Inventory.

Government Publication Date: May 15, 2023

FUDS Munitions Response Sites:

FUDS MRS

Boundaries of Munitions Response Sites (MRS), published with the Formerly Used Defense Sites (FUDS) Annual Report to Congress (ARC) by the U.S. Army Corps of Engineers (USACE). An MRS is a discrete location within a Munitions response area (MRA) that is known to require a munitions response. An MRA means any area on a defense site that is known or suspected to contain unexploded ordnance (UXO), discarded military munitions (DMM), or munitions constituents (MC). This data is compiled from the USACE's Geospatial MRS data layers and Homeland Infrastructure Foundation-Level Data (HIFLD) MRS dataset.

Government Publication Date: May 15, 2023

Former Military Nike Missile Sites:

FORMER NIKE

This information was taken from report DRXTH-AS-IA-83A016 (Historical Overview of the Nike Missile System, 12/1984) which was performed by Environmental Science and Engineering, Inc. for the U.S. Army Toxic and Hazardous Materials Agency Assessment Division. The Nike system was deployed between 1954 and the mid-1970's. Among the substances used or stored on Nike sites were liquid missile fuel (JP-4); starter fluids (UDKH, aniline, and furfuryl alcohol); oxidizer (IRFNA); hydrocarbons (motor oil, hydraulic fluid, diesel fuel, gasoline, heating oil); solvents (carbon tetrachloride, trichloroethylene, trichloroethane, stoddard solvent); and battery electrolyte. The quantities of material a disposed of and procedures for disposal are not documented in published reports. Virtually all information concerning the potential for contamination at Nike sites is confined to personnel who were assigned to Nike sites. During deactivation most hardware was shipped to depot-level supply points. There were reportedly instances where excess materials were disposed of on or near the site itself at closure. There was reportedly no routine site decontamination.

Government Publication Date: Dec 2, 1984

PHMSA Pipeline Safety Flagged Incidents:

PIPELINE INCIDENT

This list of flagged pipeline incidents is made available by the U.S. Department of Transportation (US DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA). PHMSA regulations require incident and accident reports for five different pipeline system types. Accidents reported on hazardous liquid gravity lines (§195.13) and reporting-regulated-only hazardous liquid gathering lines (§195.15) and incidents reported on Type R gas gathering (§192.8(c)) are not included in the flagged incident file data.

Government Publication Date: Nov 6, 2023

Material Licensing Tracking System (MLTS):

MLTS

A list of sites that store radioactive material subject to the Nuclear Regulatory Commission (NRC) licensing requirements. This list is maintained by the NRC. As of September 2016, the NRC no longer releases location information for sites. Site locations were last received in July 2016.

Government Publication Date: May 11, 2021

Historic Material Licensing Tracking System (MLTS) sites:

HIST MLTS

A historic list of sites that have inactive licenses and/or removed from the Material Licensing Tracking System (MLTS). In some cases, a site is removed from the MLTS when the state becomes an "Agreement State". An Agreement State is a State that has signed an agreement with the Nuclear Regulatory Commission (NRC) authorizing the State to regulate certain uses of radioactive materials within the State.

Government Publication Date: Jan 31, 2010

Mines Master Index File:

MINES

The Master Index File (MIF) is provided by the United States Department of Labor, Mine Safety and Health Administration (MSHA). This file, which was originally created in the 1970's, contained many Mine-IDs that were invalid. MSHA removes invalid IDs from the MIF upon discovery. MSHA applicable data includes the following: all Coal and Metal/Non-Metal mines under MSHA's jurisdiction since 1/1/1970; mine addresses for all mines in the database except for Abandoned mines prior to 1998 from MSHA's legacy system (addresses may or may not correspond with the physical location of the mine itself); violations that have been assessed penalties as a result of MSHA inspections beginning on 1/1/2000; and violations issued as a result of MSHA inspections conducted beginning on 1/1/2000.

Government Publication Date: May 1, 2023

Surface Mining Control and Reclamation Act Sites:

SMCRA

An inventory of land and water impacted by past mining (primarily coal mining) is maintained by the Office of Surface Mining Reclamation and Enforcement (OSMRE) to provide information needed to implement the Surface Mining Control and Reclamation Act of 1977 (SMCRA). This inventory contains information on the type and extent of Abandoned Mine Land (AML) impacts, as well as information on the cost associated with the reclamation of those problems. The data 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. Disclaimer: Per the OSMRE, States and tribes who enter their data into eAMLIS (AML Inventory System) may truncate their latitude and longitude so the precise location of usually dangerous AMLs is not revealed in an effort to protect the public from searching for these AMLs, most of which are on private property. If more precise location information is needed, please contact the applicable state/tribe of interest.

Government Publication Date: Jun 13, 2023

Mineral Resource Data System:

MRDS

The Mineral Resource Data System (MRDS) is a collection of reports describing metallic and nonmetallic mineral resources throughout the world. Included are deposit name, location, commodity, deposit description, geologic characteristics, production, reserves, resources, and references. This database contains the records previously provided in the Mineral Resource Data System (MRDS) of USGS and the Mineral Availability System/Mineral Industry Locator System (MAS/MILS) originated in the U.S. Bureau of Mines, which is now part of USGS. The USGS has ceased systematic updates of the MRDS database with their focus more recently on deposits of critical minerals while providing a well-documented baseline of historical mine locations from USGS topographic maps.

Government Publication Date: Mar 15, 2016

DOE Legacy Management Sites:

LM SITES

The U.S. Department of Energy (DOE) Office of Legacy Management (LM) currently manages radioactive and chemical waste, environmental contamination, and hazardous material at over 100 sites across the U.S. The LM manages sites with diverse regulatory drivers (statutes or programs that direct cleanup and management requirements at DOE sites) or as part of internal DOE or congressionally-recognized programs, such as but not limited to: Formerly Utilized Sites Remedial Action Program (FUSRAP), Uranium Mill Tailings Radiation Control Act (UMTRCA Title I, Title II), Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), Resource Conservation and Recovery Act (RCRA), Decontamination and Decommissioning (D&D), Nuclear Waste Policy Act (NWPA). This site listing includes data exported from the DOE Office of LM's Geospatial Environmental Mapping System (GEMS). GEMS Data disclaimer: The DOE Office of LM makes no representation or warranty, expressed or implied, regarding the use, accuracy, availability, or completeness of the data presented herein.

Government Publication Date: Dec 12, 2023

Alternative Fueling Stations:

ALT FUELS

This list of alternative fueling stations is sourced from the Alternative Fuels Data Center (AFDC). The U.S. Department of Energy's Office of Energy Efficiency & Renewable Energy launched the AFDC in 1991 as a repository for alternative fuel vehicle performance data, which provides a wealth of information and data on alternative and renewable fuels, advanced vehicles, fuel-saving strategies, and emerging transportation technologies. The data includes Biodiesel (B20 and above), Compressed Natural Gas (CNG), Electric, Ethanol (E85), Hydrogen, Liquefied Natural Gas (LNG), Propane (LPG), and Renewable Diesel (R20 and above) fuel type locations.

Government Publication Date: Nov 27, 2023

Superfunds Consent Decrees:

CONSENT DECREES

This list of Superfund consent decrees is provided by the Department of Justice, Environment & Natural Resources Division (ENRD) through a Freedom of Information Act (FOIA) applicable file. This listing includes Consent Decrees for CERCLA or Superfund Sites filed and/or as proposed within the ENRD's Case Management System (CMS) since 2010. CMS may not reflect the latest developments in a case nor can the agency guarantee the accuracy of the data. ENRD Disclaimer: Congress excluded three discrete categories of law enforcement and national security records from the requirements of the FOIA; response is limited to those records that are subject to the requirements of the FOIA; however, this should not be taken as an indication that excluded records do, or do not, exist.

Government Publication Date: Apr 19, 2023

Air Facility System:

AFS

This EPA retired Air Facility System (AFS) dataset contains emissions, compliance, and enforcement data on stationary sources of air pollution. Regulated sources cover a wide spectrum; from large industrial facilities to relatively small operations such as dry cleaners. AFS does not contain data on facilities that are solely asbestos demolition and/or renovation contractors, or landfills. ECHO Clean Air Act data from AFS are frozen and reflect data as of October 17, 2014; the EPA retired this system for Clean Air Act stationary sources and transitioned to ICIS-Air.

Government Publication Date: Oct 17, 2014

Registered Pesticide Establishments:

SSTS

This national list of active EPA-registered foreign and domestic pesticide and/or device-producing establishments is based on data from the Section Seven Tracking System (SSTS). The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) Section 7 requires that each producing establishment must place its EPA establishment number on the label or immediate container of each pesticide, active ingredient or device produced. An EPA establishment number on a pesticide product label identifies the EPA registered location where the product was produced. The list of establishments is made available by the U.S. Environmental Protection Agency (EPA).

Government Publication Date: Mar 1, 2023

Polychlorinated Biphenyl (PCB) Transformers:

PCBT

Locations of Transformers Containing Polychlorinated Biphenyls (PCBs) registered with the United States Environmental Protection Agency. PCB transformer owners must register their transformer(s) with EPA. Although not required, PCB transformer owners who have removed and properly disposed of a registered PCB transformer may notify EPA to have their PCB transformer de-registered. Data made available by EPA.

Government Publication Date: Oct 15, 2019

Polychlorinated Biphenyl (PCB) Notifiers:

PCB

Facilities included in the national list of facilities that have notified the United States Environmental Protection Agency (EPA) of Polychlorinated Biphenyl (PCB) activities. Any company or person storing, transporting or disposing of PCBs or conducting PCB research and development must notify the EPA and receive an identification number.

Government Publication Date: Oct 30, 2023

State

PFAS Sampling Locations:

PFAS SAMPLING

This data is sourced from the State Water Board's GeoTracker Per- and Polyfluoroalkyl Substances (PFAS) Map tool which contains individual sampling points (i.e., soil boring, groundwater monitoring well, drinking water well for municipal drinking water systems, etc.) or a site location with PFAS analytical data. Includes analytical results that are finalized and submitted electronically by the Responsible Parties via GeoTracker's Electronic Submittal of Information Portal, and after it's accepted by a Regional Water Quality Control Board.

Government Publication Date: Jan 2, 2024

Dry Cleaning Facilities:

DRYCLEANERS

A list of drycleaner related facilities that have EPA ID numbers. These are facilities with certain SIC codes: power laundries, family and commercial, linen supply, commercial laundry, dry cleaning and pressing machines - Coin Operated Laundry and Dry Cleaning. This is provided by the Department of Toxic Substance Control.

Government Publication Date: Dec 20, 2021

Delisted Drycleaners:

DELISTED DRYCLEANERS

Sites removed from the list of drycleaner related facilities that have EPA ID numbers, made available by the California Department of Toxic Substance Control.

Government Publication Date: Jan 31, 2022

Non-Toxic Dry Cleaning Incentive Program:

DRYC GRANT

A list of grant recipients of the Non-Toxic Dry Cleaning Incentive Program made available by the California Air Resources Board (CARB). The program provides grants to eligible dry cleaning businesses to assist them in transitioning away from PERC machines to alternative non-toxic and non-smog forming technologies.

Government Publication Date: Jan 31, 2022

PFAS GeoTracker Cleanup Sites:

PFAS GT CLEANUPS

A list of applicable cleanup sites from the State Water Resources Control Board's (SWRCB) GeoTracker data management system where one or more of the potential contaminants of concern are identified in the PFAS Master List of PFAS Substances made available by the Environmental Protection Agency (US EPA).

Government Publication Date: Nov 30, 2023

PFOA/PFOS Groundwater:

PFAS GW

A list of water wells from the Groundwater Ambient Monitoring and Assessment Program (GAMA) Groundwater Information System with the groundwater chemical perfluorooctanoic acid (PFOA) (NL = 0.014 UG/L) or perfluorooctanoic sulfonate (PFOS) (NL = 0.013 UG/L). The GAMA Groundwater Information System search is made available by California Water Boards.

Government Publication Date: Jan 7, 2024

PFAS Investigations:

PFAS INVEST

This list of potential Per- and Polyfluoroalkyl Substance (PFAS) sites is compiled from the California State Water Resources Control Board's (SWRCB) PFAS Investigations Map tool. The SWRCB issued investigative orders, per California Water Code (CWC) Section 13267 and/or 13383, to these sites. This does not mean that PFAS has been produced, used, or discharged at these sites. Orders were also issued to the public water systems to sample wells in the vicinity of these locations. The data includes locations for airports, landfills, suspected chrome plating facilities, publicly owned treatment works (aka wastewater treatment plants), bulk fuel terminals, refineries, and military facilities that have potential sources of PFAS.

Government Publication Date: Nov 28, 2022

Hazardous Waste and Substances Site List - Site Cleanup:

HWSS CLEANUP

The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements in providing information about the location of hazardous materials release sites. This list is published by California Department of Toxic Substance Control.

Government Publication Date: Mar 15, 2023

Toxic Pit Cleanup Act Sites:

TOXIC PITS

The Toxic Pits Cleanup Act (TPCA) list identifies sites suspected of containing hazardous substances where cleanup has not yet been completed. This list was maintained by the State Water Resources Control Board (SWRCB), is not longer maintained, and updates are not planned.

Government Publication Date: Jul 1, 1995

List of Hazardous Waste Facilities Subject to Corrective Action:

DTSC HWF

This is a list of hazardous waste facilities identified in Health and Safety Code (HSC) § 25187.5. These facilities are those where Department of Toxic Substances Control (DTSC) has taken or contracted for corrective action because a facility owner/operator has failed to comply with a date for taking corrective action in an order issued under HSC § 25187, or because DTSC determined that immediate corrective action was necessary to abate an imminent or substantial endangerment.

Government Publication Date: Jul 18, 2016

EnviroStor Inspection, Compliance, and Enforcement:

INSP COMP ENF

A list of permitted facilities with inspections and enforcements tracked by the California Department of Toxic Substance Control's (DTSC) EnviroStor data management system.

Government Publication Date: Nov 23, 2023

School Property Evaluation Program Sites:

SCH

A list of sites registered with The Department of Toxic Substances Control (DTSC) School Property Evaluation and Cleanup (SPEC) Division. SPEC is responsible for assessing, investigating and cleaning up proposed school sites. The Division ensures that selected properties are free of contamination or, if the properties were previously contaminated, that they have been cleaned up to a level that protects the students and staff who will occupy the new school.

Government Publication Date: Feb 15, 2024

California Hazardous Material Incident Report System (CHMIRS):

CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS). This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Oct 16, 2023

Historical California Hazardous Material Incident Report System (CHMIRS):

HIST CHMIRS

A list of reported hazardous material incidents, spills, and releases from the California Hazardous Material Incident Report System (CHMIRS) prior to 1993. This list has been made available by the California Office of Emergency Services (OES).

Government Publication Date: Jan 1, 1993

Handlers from Hazardous Waste Manifest Data:

HAZNET

A list of handlers not otherwise classified as Treatment, Storage, Disposal facilities (TSDF) or generators from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Oct 24, 2016

Generators from Hazardous Waste Manifest Data:

HAZ GEN

List of handlers listed as having generated waste from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Dec 31, 2017

TSDf from Hazardous Waste Manifest Data:

HAZ TSD

List of Treatment, Storage, and Disposal Facilities (TSDf) from the facilities and manifests data made available by the California Department of Toxic Substances Control (DTSC) in their Hazardous Waste Tracking System (HWTS).

Government Publication Date: Dec 31, 2017

Historical Hazardous Waste Manifest Data:

HIST MANIFEST

A list of historic hazardous waste manifests received by the Department of Toxic Substances Control (DTSC) from year the 1980 to 1992. The volume of manifests is typically 900,000 - 1,000,000 annually, representing approximately 450,000 - 500,000 shipments.

Government Publication Date: Dec 31, 1992

DTSC Registered Hazardous Waste Transporters:

HW TRANSPORT

The California Department of Toxic Substances Control (DTSC) maintains this list of Registered Hazardous Waste Transporters.

Government Publication Date: Jan 2, 2024

Registered Waste Tire Haulers:

WASTE TIRE

This list of registered waste tire haulers is maintained by the California Department of Resources Recycling and Recovery.

Government Publication Date: Mar 25, 2024

California Medical Waste Management Program Facility List:

MEDICAL WASTE

This list of Medical Waste Management Program Facilities is maintained by the California Department of Public Health. The Medical Waste Management Program (MWMP) regulates the generation, handling, storage, treatment, and disposal of medical waste by providing oversight for the implementation of the Medical Waste Management Act (MWMA). The MWMP permits and inspects all medical waste off-site treatment facilities, medical waste transporters, and medical waste transfer stations. This list contains transporters, treatment, and transfer facilities.

Government Publication Date: Jan 8, 2024

Historical Cortese List:

HIST CORTESE

List of sites which were once included on the Cortese list. The Hazardous Waste and Substances Sites (Cortese) List is a planning document used by the State, local agencies and developers to comply with the California Environmental Quality Act requirements for providing information about the location of hazardous sites.

Government Publication Date: Nov 13, 2008

Cease and Desist Orders and Cleanup and Abatement Orders:

CDO/CAO

The California Environment Protection Agency "Cortese List" of active Cease and Desist Orders (CDO) and Cleanup and Abatement Orders (CAO). This list contains many CDOs and CAOs that do NOT concern the discharge of wastes that are hazardous materials. Many of the listed orders concern, as examples, discharges of domestic sewage, food processing wastes, or sediment that do not contain hazardous materials, but the Water Boards' database does not distinguish between these types of orders.

Government Publication Date: Dec 6, 2021

California Environmental Reporting System (CERS) Hazardous Waste Sites:

CERS HAZ

List of sites in the California Environmental Protection Agency (CalEPA) Regulated Site Portal which fall under the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator. The CalEPA oversees the statewide implementation of the Unified Program which applies regulatory standards to protect Californians from hazardous waste and materials.

Government Publication Date: Jan 17, 2024

Delisted Environmental Reporting System (CERS) Hazardous Waste Sites:

DELISTED HAZ

This database contains a list of sites that were removed from the California Environmental Protection Agency (CalEPA) in the following regulatory programs: Hazardous Chemical Management, Hazardous Waste Onsite Treatment, Household Hazardous Waste Collection, Hazardous Waste Generator, RCRA LQ HW Generator.

Government Publication Date: Nov 29, 2018

Sites in GeoTracker:

GEOTRACKER

GeoTracker is the State Water Resource Control Boards' data management system for sites that impact, or have the potential to impact, water quality in California, with emphasis on groundwater. This is a list of sites in GeoTracker that aren't otherwise categorized as LUST, Land Disposal Sites (LDS), Cleanup Sites, or sites having Waste Discharge Requirements (WDR). This listing includes program types such as Underground Injection Control (UIC), Confined Animal Facilities (CAF), Irrigated Lands Regulatory Program, plans, and non-case information.

Government Publication Date: Nov 30, 2023

Mines Listing:

MINE

This list includes mine site locations extracted from the Mines Online database, maintained by the California Department of Conservation. Mines Online (MOL) is an interactive web map designed with GIS features that provide information such as the mine name, mine status, commodity sold, location, and other mine specific data. Please note: Mine location information is provided to assist experts in determining the location of mine operators in accordance with California Civil Code section 1103.4 and reflects information reported by mine operators in annual reports provided under Public Resources Code section 2207. While the Division of Mine Reclamation (DMR) attempts to populate MOL with accurate location information, the DMR cannot guarantee the accuracy of operator reported location information.

Government Publication Date: Jun 16, 2023

Recorded Environmental Cleanup Liens:

LIEN

The California Department of Toxic Substance Control (DTSC) maintains this list of liens placed upon real properties. A lien is utilized by the DTSC to obtain reimbursement from responsible parties for costs associated with the remediation of contaminated properties.

Government Publication Date: Dec 18, 2023

Waste Discharge Requirements:

WASTE DISCHG

List of sites in California State Water Resources Control Board (SWRCB) Waste Discharge Requirements (WDRs) Program in California, made available by the SWRCB via GeoTracker. The WDR program regulates point discharges that are exempt pursuant to Subsection 20090 of Title 27 and not subject to the Federal Water Pollution Control Act. The scope of the WDRs Program also includes the discharge of wastes classified as inert, pursuant to section 20230 of Title 27.

Government Publication Date: Nov 30, 2023

Toxic Pollutant Emissions Facilities:

EMISSIONS

A list of criteria and toxic pollutant emissions data for facilities in California made available by the California Environmental Protection Agency - Air Resources Board (ARB). Risk data may be based on previous inventory submittals. The toxics data are submitted to the ARB by the local air districts as requirement of the Air Toxics "Hot Spots" Program. This program requires emission inventory updates every four years.

Government Publication Date: Dec 31, 2020

Clandestine Drug Lab Sites:

CDL

The Department of Toxic Substances Control (DTSC) maintains a listing of drug lab sites. DTSC is responsible for removal and disposal of hazardous substances discovered by law enforcement officials while investigating illegal/ clandestine drug laboratories.

Government Publication Date: Jan 19, 2021

Tribal

No Tribal additional environmental record sources available for this State.

County**Orange County - Hazardous Waste Facilities:**

HW ORANGE

A list of Hazardous Waste Facilities in Orange County. This list is made available by Orange County Environmental Health Department.

Government Publication Date: May 15, 2023

Definitions

Database Descriptions: This section provides a detailed explanation for each database including: source, information available, time coverage, and acronyms used. They are listed in alphabetic order.

Detail Report: This is the section of the report which provides the most detail for each individual record. Records are summarized by location, starting with the project property followed by records in closest proximity.

Distance: The distance value is the distance between plotted points, not necessarily the distance between the sites' boundaries. All values are an approximation.

Direction: The direction value is the compass direction of the site in respect to the project property and/or center point of the report.

Elevation: The elevation value is taken from the location at which the records for the site address have been plotted. All values are an approximation. Source: Google Elevation API.

Executive Summary: This portion of the report is divided into 3 sections:

'Report Summary'- Displays a chart indicating how many records fall on the project property and, within the report search radii.

'Site Report Summary'-Project Property'- This section lists all the records which fall on the project property. For more details, see the 'Detail Report' section.

'Site Report Summary-Surrounding Properties'- This section summarizes all records on adjacent properties, listing them in order of proximity from the project property. For more details, see the 'Detail Report' section.

Map Key: The map key number is assigned according to closest proximity from the project property. Map Key numbers always start at #1. The project property will always have a map key of '1' if records are available. If there is a number in brackets beside the main number, this will indicate the number of records on that specific property. If there is no number in brackets, there is only one record for that property.

The symbol and colour used indicates 'elevation': the red inverted triangle will dictate 'ERIS Sites with Lower Elevation', the yellow triangle will dictate 'ERIS Sites with Higher Elevation' and the orange square will dictate 'ERIS Sites with Same Elevation.'

Unplottables: These are records that could not be mapped due to various reasons, including limited geographic information. These records may or may not be in your study area, and are included as reference.

APPENDIX E
REGULATORY AGENCY RECORDS



529-401-01
14010 REMINGTON



Assessor Map

Assessor Map Index

Assessment No.	529-401-01
Lot Number	1
Legal Start Date	2/28/1983
Lot Type	Lot
Doc. No.	PMB 177/37-39
Map No.	PM 82-0608
Doc. Ref. No.	198300328014
Doc. Ref. Date	
Legal Descr.	P-BOOK: 177 PAGE: 37 PAR: 1
Site Address	14010 REMINGTON
Landuse	200
Area sqft	261618
Perim. ft	2041
City/State	IRVINE
Zipcode	92620

Custom Query Results

Drag a column header here to group by that column.

PERMIT TYPE	ADDRESS	PERMIT #	SUITE	DESCRIPTION	CLOSED DATE	PARCEL/TRACT #	LOT
▼ Contains...	▼ Contains...	▼ Contains...	▼ Contains...	▼ Contains...	▼ On...	▼ Contains...	▼ Contains...
BUILDING PERMIT	14010 REMINGTON	00173178-EBP		TEMPORARY POLES, CHURCH PROPERTY	8/17/1999		
BUILDING PERMIT	14010 REMINGTON	00173702-FSIN		UNDERGROUND FIRE LINE	9/1/2000	6781	99
BUILDING PERMIT	14010 REMINGTON	00173711-PBP		UNDERGROUND PLUMBING	2/7/2001		
BUILDING PERMIT	14010 REMINGTON	00174057-MISC		FOUNDATIONS FOR SITE LIGHTING	2/7/2001		
BUILDING PERMIT	14010 REMINGTON	00174058-EBP		FOUNDATIONS FOR SITE LIGHTING	5/8/2000		

Items: 21

ENVIROSTOR

14010 Remington Irvine

Map Address

Sites and Facilities

Cleanup Sites

☒ Federal Superfund
 ☒ State Response
 ☒ Voluntary Cleanup
 ☒ School Cleanup
 ☒ Evaluation
 ☒ School Investigation
 ☒ Military Evaluation
 ☒ Tiered Permit
 ☒ Corrective Action
 ☐ Field Points

STATUS

All Statuses

Permitted Sites

☒ Operating
 ☒ Post-Closure
 ☒ Non-Operating

Other Sites

GIS Layers

Tools

Take a Tour

Share This Map

SITES FOUND IN SEARCH RADIUS

PROJECT NAME
IRVINE HIGH SCHOOL EXTENSION PROJECT
PROPOSED PALM MIDDLE SCHOOL
TRABUCO CLEANERS
WOODBURY AREA B MIDDLE SCHOOL

STATUS
NO FURTHER ACTION
NO FURTHER ACTION
REFER: LOCAL AGENCY
NO FURTHER ACTION

PROJECT TYPE
SCHOOL INVESTIGATION
SCHOOL INVESTIGATION
EVALUATION
SCHOOL INVESTIGATION

4 SITES LISTED

ADDRESS
4321 WALNUT AVENUE
TRABUCO ROAD/JEFFREY ROAD
13025 YALE AVE., SUITE 145
JEFFREY ROAD / BRYAN AVENUE

CITY
IRVINE
IRVINE
IRVINE
IRVINE



LEGEND - THOSE ARE THE

- ✖
- Red pin: LUST Cleanup Sites - REMOVE
- Green pin: Cleanup Program Sites - REMOVE
- Yellow pin: Military Cleanup Sites - REMOVE
- Blue pin: Military Privatized Sites - REMOVE
- Yellow pin: Military UST Sites - REMOVE

© Signature & Clouds Inc.



STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATION

FACILITY NAME

TRABUCO CLEANERS

FACILITY IDFACILITY ADDRESS

13925 YALE AVE

IRVINE, CA 92620

ORANGE COUNTY

ORIENTATION OF SITE TO STREETCROSS STREET

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGANDATE DISCOVEREDHOW DISCOVEREDDESCRIPTIONDATE STOPPEDSTOP METHODDESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGECAUSE OF DISCHARGEDISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBER

02IC017

REGIONAL BOARD CASE NUMBERLOCAL AGENCYCONTACT NAME

IC SUPERVISOR

INITIALSORGANIZATION NAME

ORANGE COUNTY LOP

EMAIL ADDRESS

ghiggins@ochca.com

<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>
1241 E. DYER RD., SUITE 120 SANTA ANA, CA 92705		HISTORICAL CONTACT FOR CASES CLOSED PRIOR TO GEOTRACKER ENTRY
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>
OFFICE	(714)-433-6260	
<u>REGIONAL BOARD</u>		
UNKNOWN		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

<u>REPORT DATE</u>	<u>HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?</u>
12/13/1991	N

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATIONFACILITY NAME

ORANGE COUNTY FIRE STATION #15

FACILITY IDFACILITY ADDRESS

3202 SANTIAGO CANYON

ORIENTATION OF SITE TO STREET

IRVINE, CA 92720

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

DIESEL

VI. DISCOVERY/ABATEMENTDATE DISCHARGE BEGANDATE DISCOVERED

12/13/1991

HOW DISCOVERED

Tank Closure

DESCRIPTIONDATE STOPPED

1/1/1965

STOP METHOD

Close and Remove Tank

DESCRIPTION**VII. SOURCE/CAUSE**SOURCE OF DISCHARGE

U

CAUSE OF DISCHARGE

U

DISCHARGE DESCRIPTION**VIII. CASE TYPE**CASE TYPE

Soil

IX. REMEDIAL ACTIONREMEDIAL ACTION

Excavation

BEGIN DATE

1/1/1965

END DATE

1/1/1965

DESCRIPTION**X. GENERAL COMMENTS****XI. CERTIFICATION**

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

<u>LOCAL AGENCY CASE NUMBER</u>	<u>REGIONAL BOARD CASE NUMBER</u>
92UT039	083000519T
LOCAL AGENCY	
UNKNOWN	
REGIONAL BOARD	
UNKNOWN	

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE

6/18/1990

HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATIONFACILITY NAME

TREASURE FARMS/IRVINE COMPANY

FACILITY IDFACILITY ADDRESS

WIND MACHINES

ORIENTATION OF SITE TO STREET

IRVINE, CA 92720

CROSS STREET

ORANGE COUNTY

JEFFREY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

GASOLINE

VI. DISCOVERY/ABATEMENTDATE DISCHARGE BEGANDATE DISCOVEREDHOW DISCOVEREDDESCRIPTIONDATE STOPPEDSTOP METHODDESCRIPTIONVII. SOURCE/CAUSESOURCE OF DISCHARGE

Other

CAUSE OF DISCHARGE

Unknown

DISCHARGE DESCRIPTIONVIII. CASE TYPECASE TYPE

Soil

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTSXI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLYLOCAL AGENCY CASE NUMBERREGIONAL BOARD CASE NUMBER

083001672T

LOCAL AGENCY

<u>CONTACT NAME</u>	<u>INITIALS</u>	<u>ORGANIZATION NAME</u>	<u>EMAIL ADDRESS</u>
ORANGE COUNTY	OC	ORANGE COUNTY	
<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>	
1241 E. DYER ROAD SUITE 120 Santa Ana, CA 927055611			

REGIONAL BOARD

<u>CONTACT NAME</u>	<u>INITIALS</u>	<u>ORGANIZATION NAME</u>	<u>EMAIL ADDRESS</u>
MIGUEL OVIEDO	MAO	SANTA ANA RWQCB (REGION 8)	miguel.oviedo@waterboards.ca.gov
<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>	
3737 Main Street, Suite 500 RIVERSIDE, CA 92501			
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>	
PHONE	(951)-782-3238		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

<u>REPORT DATE</u> 1/1/1965	<u>HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?</u> N
--------------------------------	--

<u>I. REPORTED BY -</u> UNKNOWN	<u>CREATED BY</u> UNKNOWN
------------------------------------	------------------------------

III. SITE LOCATION

<u>FACILITY NAME</u> FMC CORP	<u>FACILITY ID</u>
<u>FACILITY ADDRESS</u> 13242 JEFFREY IRVINE, CA 92714 ORANGE COUNTY	<u>ORIENTATION OF SITE TO STREET</u> <u>CROSS STREET</u>

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

OTHER SOLVENT OR NON-PETROLEUM HYDROCARBON

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGAN

<u>DATE DISCOVERED</u> 1/1/1965	<u>HOW DISCOVERED</u> Tank Closure	<u>DESCRIPTION</u>
------------------------------------	---------------------------------------	--------------------

<u>DATE STOPPED</u> 1/1/1965	<u>STOP METHOD</u> Close and Remove Tank	<u>DESCRIPTION</u>
---------------------------------	---	--------------------

VII. SOURCE/CAUSE

<u>SOURCE OF DISCHARGE</u> U	<u>CAUSE OF DISCHARGE</u> U
<u>DISCHARGE DESCRIPTION</u>	

VIII. CASE TYPE

CASE TYPE
Under Investigation

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

<u>LOCAL AGENCY CASE NUMBER</u> 85UT132	<u>REGIONAL BOARD CASE NUMBER</u>
--	-----------------------------------

LOCAL AGENCY

UNKNOWN

REGIONAL BOARD

<u>CONTACT NAME</u>	<u>INITIALS</u>	<u>ORGANIZATION NAME</u>	<u>EMAIL ADDRESS</u>
MAILE SEEGER GEE	MG	SANTA ANA RWQCB (REGION 8)	maile.gee@waterboards.ca.gov
<u>ADDRESS</u>	<u>CONTACT DESCRIPTION</u>		
3737 MAIN STREET, SUITE 500 RIVERSIDE, CA 92501-3339			
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>	
PHONE	(951)-782-4379		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATION

FACILITY NAMEFACILITY ID

TREASURE FARMS

FACILITY ADDRESSORIENTATION OF SITE TO STREET

0 NE JEFFREY & TRABUCO RD

IRVINE, CA 92720

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGANDATE DISCOVEREDHOW DISCOVEREDDESCRIPTIONDATE STOPPEDSTOP METHODDESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGECAUSE OF DISCHARGEDISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBERREGIONAL BOARD CASE NUMBER

90IC023

LOCAL AGENCYCONTACT NAMEINITIALSORGANIZATION NAMEEMAIL ADDRESS

IC SUPERVISOR

ORANGE COUNTY LOP

ghiggins@ochca.com

<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>
1241 E. DYER RD., SUITE 120 SANTA ANA, CA 92705		HISTORICAL CONTACT FOR CASES CLOSED PRIOR TO GEOTRACKER ENTRY
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>
OFFICE	(714)-433-6260	
<u>REGIONAL BOARD</u>		
UNKNOWN		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATION

FACILITY NAME

NORTHWOOD CLEANERS

FACILITY IDFACILITY ADDRESS

4790 IRVINE BLVD

ORIENTATION OF SITE TO STREET

IRVINE, CA 92620

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGANDATE DISCOVEREDHOW DISCOVEREDDESCRIPTIONDATE STOPPEDSTOP METHODDESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGECAUSE OF DISCHARGEDISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBER

98IC018

REGIONAL BOARD CASE NUMBERLOCAL AGENCYCONTACT NAME

IC SUPERVISOR

INITIALSORGANIZATION NAME

ORANGE COUNTY LOP

EMAIL ADDRESS

ghiggins@ochca.com

<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>
1241 E. DYER RD., SUITE 120 SANTA ANA, CA 92705		HISTORICAL CONTACT FOR CASES CLOSED PRIOR TO GEOTRACKER ENTRY
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>
OFFICE	(714)-433-6260	
<u>REGIONAL BOARD</u>		
UNKNOWN		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

<u>REPORT DATE</u>	<u>HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?</u>
2/17/1998	N

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATIONFACILITY NAME

SHELL OIL

FACILITY IDFACILITY ADDRESS

4162 TRABUCO

ORIENTATION OF SITE TO STREET

IRVINE, CA 92620

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

GASOLINE

VI. DISCOVERY/ABATEMENTDATE DISCHARGE BEGANDATE DISCOVERED

2/10/1998

HOW DISCOVERED

UST System Modification

DESCRIPTIONDATE STOPPED

1/1/1965

STOP METHOD

Replace product piping

DESCRIPTION**VII. SOURCE/CAUSE**SOURCE OF DISCHARGE

Piping

CAUSE OF DISCHARGE

U

DISCHARGE DESCRIPTION**VIII. CASE TYPE**CASE TYPE

Aquifer used for drinking water supply

IX. REMEDIAL ACTIONREMEDIAL ACTION

In Situ Physical/Chemical Treatment (other than SVE)

Excavation

BEGIN DATE

9/23/2002

10/1/2002

END DATE

10/15/2005

10/1/2002

DESCRIPTION

DPE System

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports in GeoTracker for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLYLOCAL AGENCY CASE NUMBER

98UT015

REGIONAL BOARD CASE NUMBER

083003738T

LOCAL AGENCY

UNKNOWN

REGIONAL BOARDCONTACT NAME

MAILE SEEGER GEE

INITIALS

MG

ORGANIZATION NAME

SANTA ANA RWQCB (REGION 8)

EMAIL ADDRESS

maile.gee@waterboards.ca.gov

ADDRESS

3737 MAIN STREET, SUITE 500

RIVERSIDE, CA 92501-3339

CONTACT DESCRIPTIONPHONE TYPE

PHONE

PHONE NUMBER

(951)-782-4379

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATION

FACILITY NAME

THE IRVINE CO (ORANGE GROVES)

FACILITY IDFACILITY ADDRESS

UNK TRABUCO RD

ORIENTATION OF SITE TO STREET

IRVINE, CA 92720

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGANDATE DISCOVEREDHOW DISCOVEREDDESCRIPTIONDATE STOPPEDSTOP METHODDESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGECAUSE OF DISCHARGEDISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBER

90IC020

REGIONAL BOARD CASE NUMBERLOCAL AGENCYCONTACT NAME

IC SUPERVISOR

INITIALSORGANIZATION NAME

ORANGE COUNTY LOP

EMAIL ADDRESS

ghiggins@ochca.com

<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>
1241 E. DYER RD., SUITE 120 SANTA ANA, CA 92705		HISTORICAL CONTACT FOR CASES CLOSED PRIOR TO GEOTRACKER ENTRY
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>
OFFICE	(714)-433-6260	
<u>REGIONAL BOARD</u>		
UNKNOWN		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

REPORT DATE HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATION

FACILITY NAMEFACILITY ID

FORMER OC INTERNATIONAL RACEWAY

FACILITY ADDRESSORIENTATION OF SITE TO STREET

UNK 5 FWY @ ROUTE 133

IRVINE, CA 92618

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

VI. DISCOVERY/ABATEMENT

DATE DISCHARGE BEGANDATE DISCOVEREDHOW DISCOVEREDDESCRIPTIONDATE STOPPEDSTOP METHODDESCRIPTION

VII. SOURCE/CAUSE

SOURCE OF DISCHARGECAUSE OF DISCHARGEDISCHARGE DESCRIPTION

VIII. CASE TYPE

CASE TYPE

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

LOCAL AGENCY CASE NUMBERREGIONAL BOARD CASE NUMBER

84IC004

LOCAL AGENCYCONTACT NAMEINITIALSORGANIZATION NAMEEMAIL ADDRESS

IC SUPERVISOR

ORANGE COUNTY LOP

ghiggins@ochca.com

<u>ADDRESS</u>		<u>CONTACT DESCRIPTION</u>
1241 E. DYER RD., SUITE 120 SANTA ANA, CA 92705		HISTORICAL CONTACT FOR CASES CLOSED PRIOR TO GEOTRACKER ENTRY
<u>PHONE TYPE</u>	<u>PHONE NUMBER</u>	<u>EXTENSION</u>
OFFICE	(714)-433-6260	
<u>REGIONAL BOARD</u>		
UNKNOWN		

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER

CASE SUMMARY

<u>REPORT DATE</u>	<u>HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?</u>
7/15/1998	N

I. REPORTED BY -

UNKNOWN

CREATED BY

UNKNOWN

III. SITE LOCATIONFACILITY NAME

TOSCO - 76 #6525

FACILITY IDFACILITY ADDRESS

5410 WALNUT

ORIENTATION OF SITE TO STREET

IRVINE, CA 92604

CROSS STREET

ORANGE COUNTY

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

GASOLINE

VI. DISCOVERY/ABATEMENTDATE DISCHARGE BEGANDATE DISCOVERED

2/9/1998

HOW DISCOVERED

* SA

DESCRIPTIONDATE STOPPED

1/1/1965

STOP METHOD

Other Means

DESCRIPTION**VII. SOURCE/CAUSE**SOURCE OF DISCHARGE

U

CAUSE OF DISCHARGE

U

DISCHARGE DESCRIPTION**VIII. CASE TYPE**CASE TYPE

Aquifer used for drinking water supply

IX. REMEDIAL ACTIONREMEDIAL ACTION

Soil Vapor Extraction (SVE)

BEGIN DATE

6/23/2004

END DATE

6/25/2004

DESCRIPTION

Soil Vapor Extraction (SVE)

3/18/2006

3/24/2006

Excavation

11/1/2008

11/1/2008

X. GENERAL COMMENTS

Please refer to recent Site Documents or Monitoring Reports in GeoTracker for site history. Orange County is not responsible for the accuracy of any professional interpretations provided in reports submitted by consultants for the responsible party.

XI. CERTIFICATION

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLYLOCAL AGENCY CASE NUMBER

98UT052

REGIONAL BOARD CASE NUMBER

083003222T

LOCAL AGENCY

UNKNOWN

REGIONAL BOARD

UNKNOWN

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STATE WATER RESOURCES CONTROL BOARD

GEOTRACKER**CASE SUMMARY**

REPORT DATE HAZARDOUS MATERIAL INCIDENT REPORT FILED WITH OES?
2/6/1992

I. REPORTED BY - CREATED BY
UNKNOWN UNKNOWN

III. SITE LOCATION

<u>FACILITY NAME</u>	<u>FACILITY ID</u>
OR. CO. FIRE STATION #26-57/58	
<u>FACILITY ADDRESS</u>	<u>ORIENTATION OF SITE TO STREET</u>
4691 WALNUT AVE	
IRVINE, CA 92714	<u>CROSS STREET</u>
ORANGE COUNTY	YALE

V. SUBSTANCES RELEASED / CONTAMINANT(S) OF CONCERN

GASOLINE

VI. DISCOVERY/ABATEMENTDATE DISCHARGE BEGAN

<u>DATE DISCOVERED</u>	<u>HOW DISCOVERED</u>	<u>DESCRIPTION</u>
12/7/1991	Tank Tightness Test	

<u>DATE STOPPED</u>	<u>STOP METHOD</u>	<u>DESCRIPTION</u>
12/8/1991		

VII. SOURCE/CAUSE

<u>SOURCE OF DISCHARGE</u>	<u>CAUSE OF DISCHARGE</u>
Piping	
<u>DISCHARGE DESCRIPTION</u>	

VIII. CASE TYPE

CASE TYPE
Soil

IX. REMEDIAL ACTION

NO REMEDIAL ACTIONS ENTERED

X. GENERAL COMMENTS**XI. CERTIFICATION**

I HEREBY CERTIFY THAT THE INFORMATION REPORTED HEREIN
IS TRUE AND ACCURATE TO THE BEST OF MY KNOWLEDGE.

XII. REGULATORY USE ONLY

<u>LOCAL AGENCY CASE NUMBER</u>	<u>REGIONAL BOARD CASE NUMBER</u>
	083002062T

LOCAL AGENCY
UNKNOWN
REGIONAL BOARD
UNKNOWN

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FREEDOM OF INFORMATION ACT REQUEST

TO: City of Irvine, California

ATTN: Environmental Health Division
Fire Department,
Building Department
Via email

FROM: Beth Ullom, P.G.
Enercon Service, Inc.

RE: 14010 Remington Road, Irvine, California

ENERCON SERVICES, INC. is currently performing an environmental due diligence evaluation for the above **referenced property/ies**. As part of this evaluation, we are requesting information (if relevant/available) related to the following items for the property address:

- Records of underground storage tank installation and or removal.
- Records of aboveground storage tank installation and or removal.
- Records of known chemical spills.
- Date of construction, acreage and square footage of improvements.
- Outstanding building code violations.
- Outstanding fire code violations.

Please contact me at your earliest convenience, either via email or mail. My contact information can be found below. Thank you for your assistance!

Beth Ullom
Principal Technical Specialist
Enercon Services, Inc.
Springfield, Ohio
937-926-6931
bullom@enercon.com



FREEDOM OF INFORMATION ACT REQUEST

TO: Orange County, California

ATTN: Environmental Health Division
Fire Department(s)
Building Department/Code Enforcement
Via email

FROM: Beth Ullom, P.G.
Enercon Service, Inc.

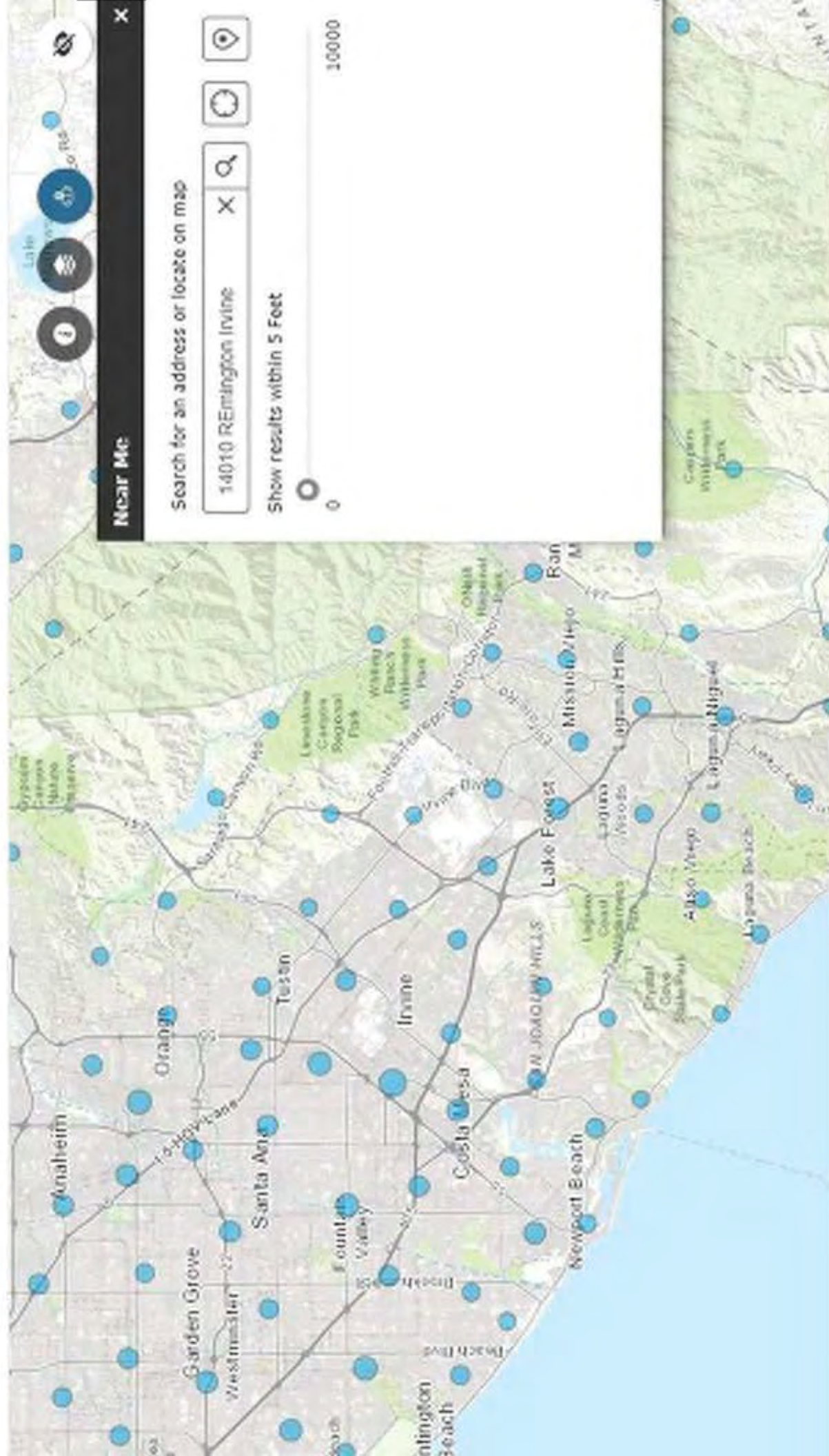
RE: **14010 Remington Drive, Irvine CA**

ENERCON SERVICES, INC. is currently performing an environmental due diligence evaluation for the above **referenced property/ies**. As part of this evaluation, we are requesting information (if relevant/available) related to the following items for the property address:

- Records of underground storage tank installation and or removal.
- Records of aboveground storage tank installation and or removal.
- Records of known chemical spills.
- Date of construction, acreage and square footage of improvements.
- Outstanding building code violations.
- Outstanding fire code violations.

Please contact me at your earliest convenience, either via email or mail. My contact information can be found below. Thank you for your assistance!

Beth Ullom
Principal Technical Specialist
Enercon Services, Inc.
Springfield, Ohio
937-926-6931
bullom@enercon.com



Near Me

Search for an address or locate on map

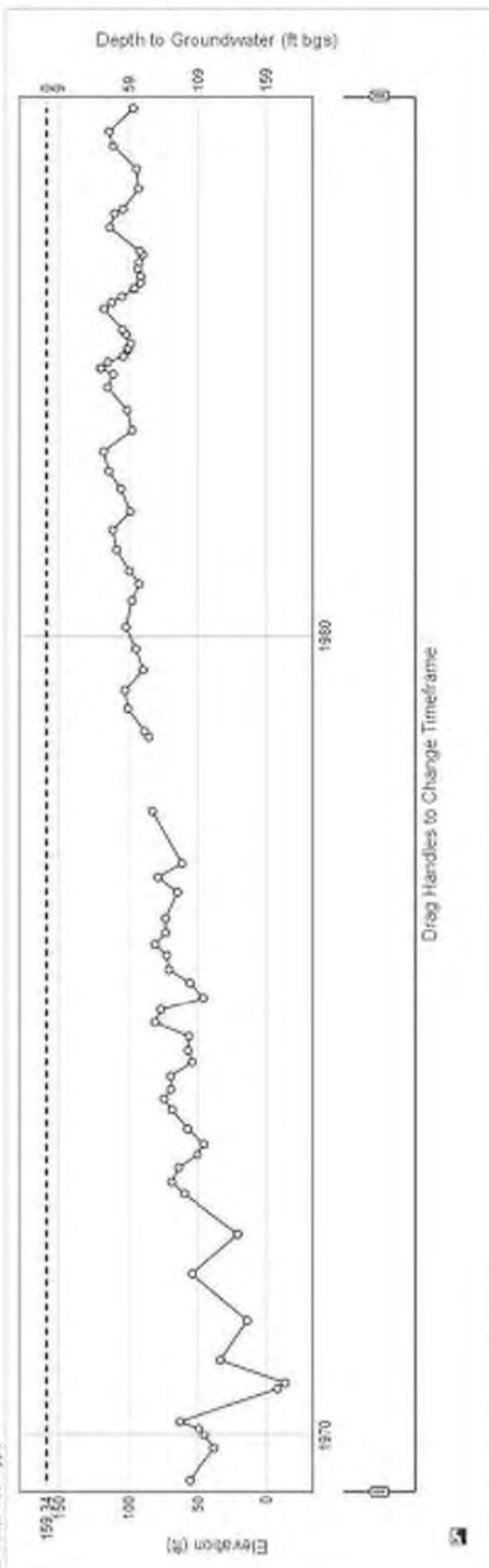
14010 REMINGTON Irvine

Show results within 5 Feet

10000

Groundwater Elevation

Water Year Type



Date: (Hover to see values)

☒ Ground Surface

☒ Depth to Groundwater

☒ Groundwater Elevation

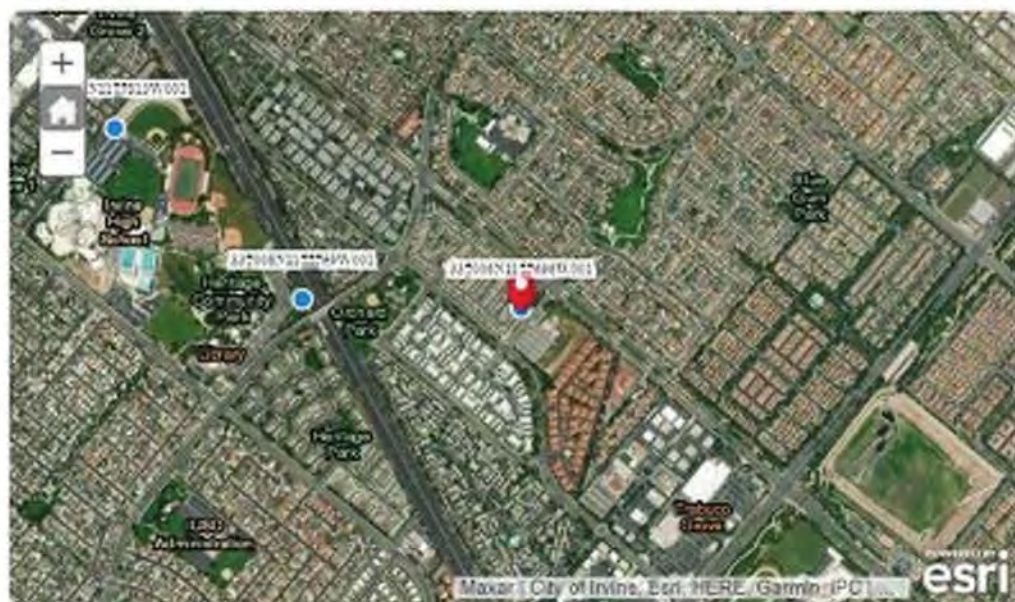
View Water Level Table

S37008N177656W001

Site Code: 337006N1177696W001 State Well Number: 05S09W36B001S Local Well Name: 05S09W36B001S



Site Code: 337006N1177696W001
Local Well Name: 05S09W36B001S
State Well Number: 05S09W36B001S
Station ID: 29082
WCR Number:
Latitude: 33.70060
Longitude: -117.76960
Station Organization ID:
Station Organization Name:
Well Location Description:
Well Use Type: Unknown
Well Completion Type: Unknown
Well Depth (feet bgs):
Top Perforation (feet bgs):
Bottom Perforation (feet bgs):
Ground Surface Elevation: 159.34
Reference Point Elevation: 159.34
Reference Point Description: None Provided
Station Comments:



Well Completion Report



No lithology data found.

Site Code: 337006N1177696W001 State Well Number: 05S09W36B001S Local Well Name: 05S09W36B001

Elevation: 159.34

Reference Point

Elevation: 159.34

Reference Point

Description: None Provided

Station Comments:

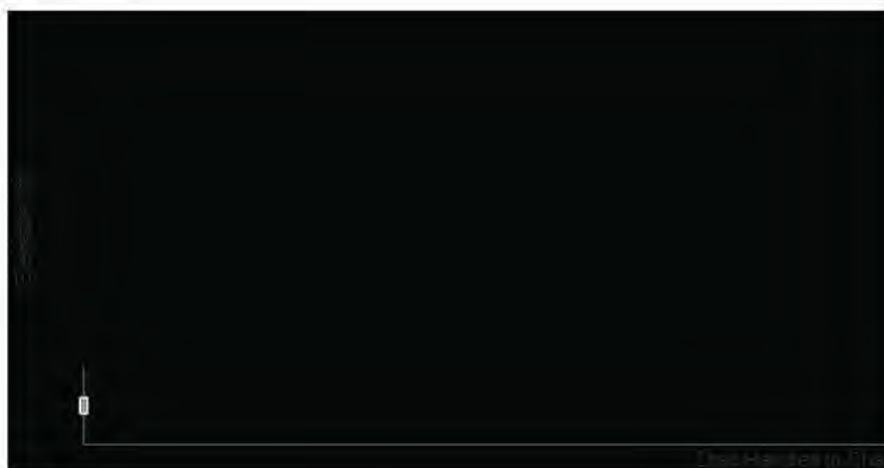


Well Completion Report

No lithology data found.

Groundwater Elevation

☐ Water Year Type



Date: (hover to see values)

☒ -- Ground Surface

☒ -- Groundwater Elevation

☒ -- Depth to Groundwater

View Water Level Table

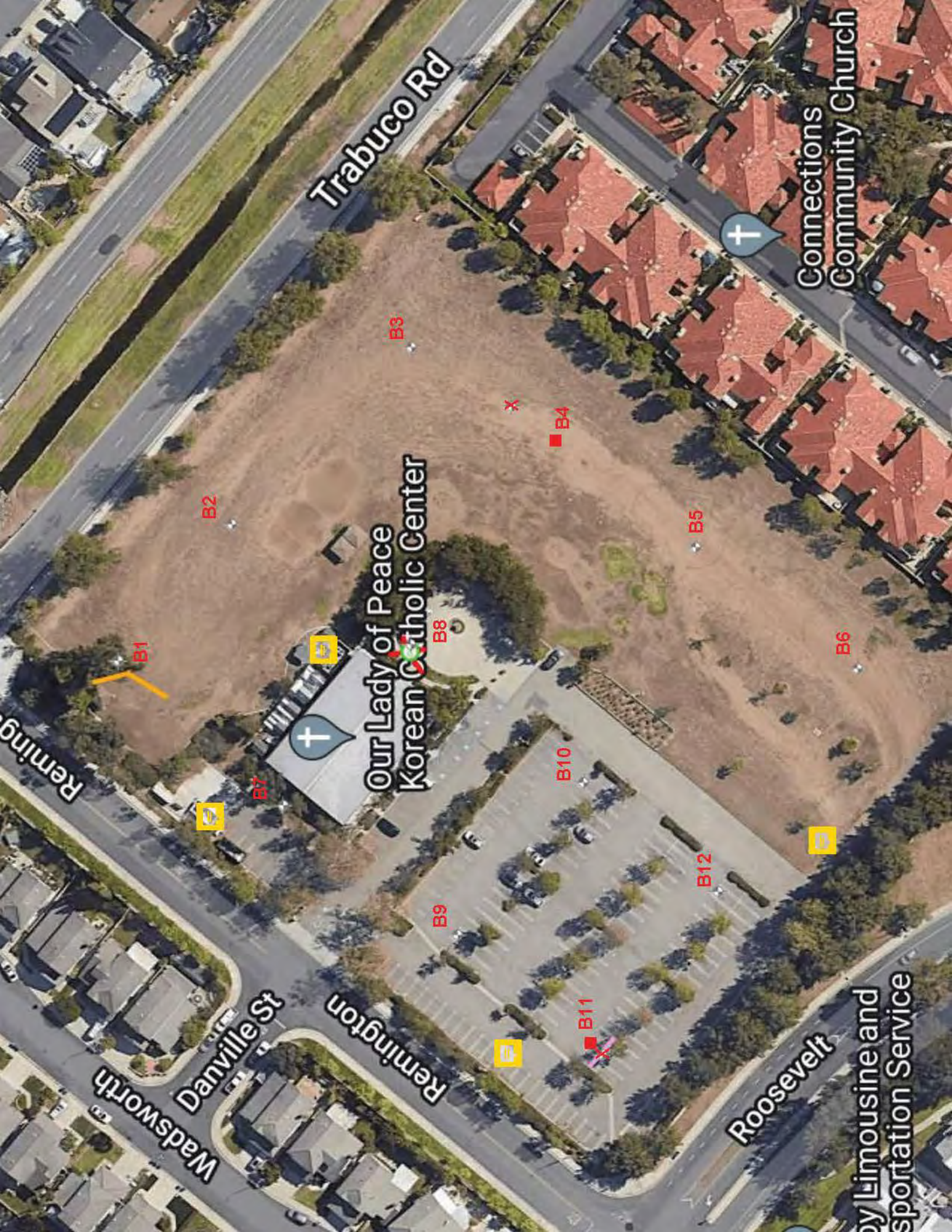
337006N1177696W001

Search:

MSMT_DATE	WSE	RPE_WSE	GSE_WSE	WLM_RPE	WLM_GSE	WLM_ORG_NAME	WLM_OA_DESC	WL
1969-06-09	56.14	103.20	103.20	159.34	159.34	Department of Water Resources	Good	
1969-11-04	38.14	121.20	121.20	159.34	159.34	Department of Water Resources	Good	
1970-01-02	45.04	114.30	114.30	159.34	159.34	Department of Water Resources	Good	
1970-02-04	49.34	110.00	110.00	159.34	159.34	Department of Water Resources	Good	
1970-03-09	63.34	96.00	96.00	159.34	159.34	Department of Water Resources	Good	
1970-08-07	-7.76	167.10	167.10	159.34	159.34	Department of Water Resources	Good	
1970-09-02	-13.16	172.50	172.50	159.34	159.34	Department of Water Resources	Good	

The screenshot shows the SGMA Data Viewer interface. At the top, there is a search bar containing the text "14010 Rerrington, Irv". Below the search bar, a map of the Yuba River area is displayed. The map shows various parks, including Oakland Park, Heritage Park, Horner's 1 Park, and Horner's 2 Park. Major roads like Yuba Ave, State Route 99, and Highway 99 are visible. A blue location pin is placed on the map, and a small inset map in the top right corner shows the location within a larger context. The map is labeled with "Imagery with Labels".

APPENDIX F
LABORATORY REPORT



Trabuco Rd

Connections
Community Church

Our Lady of Peace
Korean Catholic Center

Remington

Wadsworth St

Danville St

Remington

Roosevelt
by Limousine and
Transportation Service

B2

B3

X

B4

B5

B6

B1

B7

B8

B10

B12

B9

B11

ELEC_BOX	FUEL_AST	MISC_CONTINUES	STEAM_CONTINUES	UNKN_CONTINUES
ELEC_CABINET	FUEL_CONTINUES	MISC_DEPTH	STEAM_EOI	UNKN_EOI
ELEC_CONTINUES	FUEL_EOI	MISC_EOI	STEAM_MANHOLE	UNKN_MANHOLE
ELEC_EOI	FUEL_MANHOLE	MISC_MANHOLE	STEAM_VALVE	UNKN_MISC
ELEC_EQUIPMENT	FUEL_MISC	MISC_POINT	STRM_CATCHBASINROUND	UNKN_VALVE
ELEC_LANDSCAPELIGHT	FUEL_PUMP	MISC_VALVE	STRM_CATCHBASINSQUARE	WTR_BACKFLOWPREVENTOR
ELEC_MANHOLE	FUEL_RISER	OIL_CONTINUES	STRM_CLEANOUT	WTR_CONTINUES
ELEC_METER	FUEL_UST	OIL_EOI	STRM_CONTINUES	WTR_EOI
ELEC_MISC	FUEL_VALVE	OIL_MANHOLE	STRM_ENDPIPE	WTR_HYDRANT
ELEC_PANEL	FUEL_VAULT	OIL_MISC	STRM_EOI	WTR_MANHOLE
ELEC_POWERPOLE	FUEL_VENT	OIL_PUMP	STRM_LIFTSTATION	WTR_METER
ELEC_SIGN	GAS_AST	OIL_RISER	STRM_MANHOLE	WTR_MISC
ELEC_SITELIGHT	GAS_CONTINUES	OIL_TANK	STRM_MISC	WTR_POSTINDICATORVALVE
ELEC_TRANSFORMER	GAS_EOI	OIL_UST	STRM_ROOFDRAIN	WTR_RISER
ELEC_UTILITYPOLE	GAS_MANHOLE	OIL_VALVE	STRM_TRENCHDRAIN	WTR_VALVE
ELEC_VAULT	GAS_METER	OIL_VAULT	STRM_UST	WTR_WELLHEAD
FIRE_BACKFLOWPREVENTOR	GAS_MISC	OIL_VENT	STRM_VAULT	BUILDING CORNER
FIRE_CONTINUES	GAS_PUMP	SAN_CLEANOUT	STRM_VENT	FLAGPOLE
FIRE_EOI	GAS_RISER	SAN_CONTINUES	STRM_YARDBASIN	GRAVE
FIRE_HYDRANT	GAS_UST	SAN_EOI	TRAF_BOX	GRAVE
FIRE_MANHOLE	GAS_VALVE	SAN_GREASETRAP	TRAF_CABINET	HEADSTONE NO GRAVE
FIRE_METER	GAS_VAULT	SAN_INVERT	TRAF_CONTINUES	MAILBOX
FIRE_MISC	GAS_VENT	SAN_LIFTSTATION	TRAF_EOI	POST
FIRE_POSTINDICATORVALVE	IRR_BACKFLOWPREVENTOR	SAN_MANHOLE	TRAF_MANHOLE	PROPOSED BY OTHERS
FIRE_RISER	IRR_CONTINUES	SAN_MARKER	TRAF_MISC	SATELLITE
FIRE_VALVE	IRR_CONTROL VALVE	SAN_MISC	TRAF_PARKINGMETER	SIGN
	IRR_EOI	SAN_SEPTICTANK	TRAF_POLE	SOIL BORING MARKER
	IRR_MISC	SAN_VAULT	TRAF_SIGN	
	IRR_RISER	SAN_VENT	TRAF_SIGNAL	
	IRR_SPRINKLER		TRAF_STREETLIGHT	
			TREE_CONIFEROUS	

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

Date: April 4, 2024

Ms. Theresa Heirshberg
Enercon Services, Inc.
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

Project: **Remington**
Project No.: **ENC-240101**
Lab I.D.: **240328-39 through -62**

Dear Ms. Heirshberg:

The **analytical results** for the soil samples, received by our laboratory on March 28, 2024, are attached. The samples were received chilled, intact and accompanying chain of custody record.

Enviro-Chem appreciates the opportunity to provide you and your company this and other services. Please do not hesitate to call us if you have any questions.

Sincerely,



Pearl Wong
Quality Manager

This data package has been reviewed for technical correctness and completeness. Release of this data has been authorized by the **Laboratory Manager or Manager's Designee, as verified by the above** signature which applies to this PDF File as well as any associated electronic data deliverable files. The results contained in this report meet all requirements of ELAP and pertain only to those samples which were submitted for analysis. This report may be reproduced only in its entirety.

LABORATORY REPORT

CUSTOMER: Enercon Services, Inc.
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: Remington PROJECT No.: ENC-240101
MATRIX: SOIL DATE RECEIVED: 03/28/24
SAMPLING DATE: 03/27/24 DATE ANALYZED: 03/29/24
REPORT TO: MS. THERESA HEIRSHBERG DATE REPORTED: 04/04/24

EPA 6010B FOR TTLC-ARSENIC/LEAD
UNITS: mg/Kg = MILLIGRAM PER KILOGRAM = PPM

SAMPLE I.D.	LAB I.D.	ARSENIC RESULT	DF	LEAD RESULT	DF
B3-0.5	240328-41	9.68	1	16.6	1
B7-0.5	240328-45	7.89	1	7.25	1
B11-0.5	240328-49	7.41	1	5.04	1
Method Blank	---	ND	1	ND	1
	PQL	0.50		0.50	

COMMENTS:

DF = Dilution Factor

PQL = Practical Quantitation Limit

Actual Detection Limit = DF X PQL

ND = Non-Detected or below the Actual Detection Limit

TTLC = Total Threshold Limit Concentration

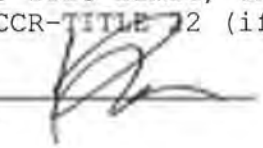
STLC = Soluble Threshold Limit Concentration

TTLC Limit for Arsenic = 500 PPM / STLC Limit for Arsenic = 5 PPM

TTLC Limit for lead = 1000 PPM / STLC Limit for lead = 5 PPM

* = STLC analysis is recommended (if marked)

*** = The concentration exceeds the TTLC Limit, therefore the sample is defined as hazardous waste as per CCR-TITLE 22 (if marked)

DATA REVIEWED AND APPROVED BY: 
CAL-DHS ELAP CERTIFICATE No.: 1555

QA/QC for Metals Analysis --TTLC--SOLID/SOIL MATRIX

Matrix Spike/ Matrix Spike Duplicate/ LCS :

ANALYSIS DATE: 3/29/2024

Unit : mg/Kg(ppm)

Analysis	Spk.Sample ID	CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Arsenic (As)	240328-2	50.0	99	PASS	0	50.0	52.9	108	52.3	105	1
Cadmium (Cd)	240328-2	50.0	114	PASS	15.0	50.0	69.7	109	69.7	109	0
Lead (Pb)	240328-2	50.0	114	PASS	3.16	50.0	56.8	107	56.7	107	0

ANALYSIS DATE. : 3/29/2024

Analysis	Spk. Sample ID	LCS CONC.	LCS %Rec.	LCS STATUS	Sample Result	Spike Conc.	MS	% Rec MS	MSD	% Rec MSD	% RPD
Mercury (Hg)	240328-2	0.125	95	PASS	0	0.125	0.1090	87	0.113	90	3

MS/MSD Status:

Analysis	%MS	%MSD	%LCS	%RPD
Arsenic (As)	PASS	PASS	PASS	PASS
Cadmium (Cd)	PASS	PASS	PASS	PASS
Lead (Pb)	PASS	PASS	PASS	PASS
Mercury (Hg)	PASS	PASS	PASS	PASS
Accepted Range	70~ 130	70~ 130	85 ~ 115	0 ~ 20

ANALYST: 

FINAL REVIEWER: 

*=Fail due to matrix interference

Note:LCS is in control therefore results are in control

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: **Enercon Services, Inc.**
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: **Remington**

PROJECT No.: **ENC-240101**

MATRIX: **SOIL**

DATE RECEIVED: **03/28/24**

SAMPLING DATE: **03/27/24**

DATE EXTRACTED: **03/28/24**

REPORT TO: **MS. THERESA HEIRSHBERG**

DATE ANALYZED: **03/28/24**

DATE REPORTED: **04/04/24**

SAMPLE I.D.: **B1/2/3/4-0.5 (Composite)**

LAB I.D.: **240328-39/40/41/42 (Composite)**

Organochlorine Pesticides Analysis

Method: **EPA 8081A**

Unit: **mg/Kg = Milligram Per Kilogram = PPM**

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	10
alpha-BHC	ND	0.001	10
beta-BHC	ND	0.001	10
gamma-BHC (Lindane)	ND	0.001	10
delta-BHC	ND	0.001	10
alpha-Chlordane	ND	0.001	10
gamma-Chlordane	ND	0.001	10
Total Chlordane (Technical)	ND	0.005	10
4,4'-DDD	ND	0.001	10
4,4'-DDE	0.020	0.001	10
4,4'-DDT	0.023	0.001	10
Dieldrin	ND	0.001	10
Endosulfan I	ND	0.001	10
Endosulfan II	ND	0.001	10
Endosulfan Sulfate	ND	0.001	10
Endrin	ND	0.001	10
Endrin Aldehyde	ND	0.001	10
Endrin Ketone	ND	0.001	10
Heptachlor Epoxide	ND	0.001	10
Heptachlor	ND	0.001	10
Methoxychlor	ND	0.001	10
Toxaphene	ND	0.020	10

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

LABORATORY REPORT

CUSTOMER: Enercon Services, Inc.

4111 Broad St., Suite 210

San Luis Obispo, CA 93401

Tel: (805) 443-7641

E-Mail: THeirshberg@Enercon.com

PROJECT: Remington

PROJECT No.: ENC-240101

DATE RECEIVED: 03/28/24

MATRIX: SOIL

DATE EXTRACTED: 03/28/24

SAMPLING DATE: 03/27/24

DATE ANALYZED: 03/28/24

REPORT TO: MS. THERESA HEIRSHBERG

DATE REPORTED: 04/04/24

SAMPLE I.D.: B5/6/7/8-0.5 (Composite)

LAB I.D.: 240328-43/44/45/46 (Composite)

Organochlorine Pesticides Analysis

Method: EPA 8081A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	1
alpha-BHC	ND	0.001	1
beta-BHC	ND	0.001	1
gamma-BHC (Lindane)	ND	0.001	1
delta-BHC	ND	0.001	1
alpha-Chlordane	ND	0.001	1
gamma-Chlordane	ND	0.001	1
Total Chlordane (Technical)	ND	0.005	1
4,4'-DDD	ND	0.001	1
4,4'-DDE	ND	0.001	1
4,4'-DDT	ND	0.001	1
Dieldrin	ND	0.001	1
Endosulfan I	ND	0.001	1
Endosulfan II	ND	0.001	1
Endosulfan Sulfate	ND	0.001	1
Endrin	ND	0.001	1
Endrin Aldehyde	ND	0.001	1
Endrin Ketone	ND	0.001	1
Heptachlor Epoxide	ND	0.001	1
Heptachlor	ND	0.001	1
Methoxychlor	ND	0.001	1
Toxaphene	ND	0.020	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:

CAL-DHS ELAP CERTIFICATE No.: 1555

LABORATORY REPORT

CUSTOMER: **Enercon Services, Inc.**
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: **Remington**

PROJECT No.: **ENC-240101**

MATRIX: **SOIL**

DATE RECEIVED: 03/28/24

SAMPLING DATE: 03/27/24

DATE EXTRACTED: 03/28/24

REPORT TO: **MS. THERESA HEIRSHBERG**

DATE ANALYZED: 03/28/24

DATE REPORTED: 04/04/24

SAMPLE I.D.: **B9/10/11/12-0.5 (Composite)**

LAB I.D.: **240328-47/48/49/50 (Composite)**

Organochlorine Pesticides Analysis

Method: EPA 8081A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	1
alpha-BHC	ND	0.001	1
beta-BHC	ND	0.001	1
gamma-BHC (Lindane)	ND	0.001	1
delta-BHC	ND	0.001	1
alpha-Chlordane	ND	0.001	1
gamma-Chlordane	ND	0.001	1
Total Chlordane (Technical)	ND	0.005	1
4,4'-DDD	ND	0.001	1
4,4'-DDE	ND	0.001	1
4,4'-DDT	ND	0.001	1
Dieldrin	ND	0.001	1
Endosulfan I	ND	0.001	1
Endosulfan II	ND	0.001	1
Endosulfan Sulfate	ND	0.001	1
Endrin	ND	0.001	1
Endrin Aldehyde	ND	0.001	1
Endrin Ketone	ND	0.001	1
Heptachlor Epoxide	ND	0.001	1
Heptachlor	ND	0.001	1
Methoxychlor	ND	0.001	1
Toxaphene	ND	0.020	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____

CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro - Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909) 590-5905 Fax (909) 590-5907

METHOD BLANK REPORT

CUSTOMER: Enercon Services, Inc.
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: Remington

PROJECT No.: ENC-240101

DATE RECEIVED: 03/28/24

MATRIX: SOIL

DATE EXTRACTED: 03/28/24

SAMPLING DATE: 03/27/24

DATE ANALYZED: 03/28/24

REPORT TO: MS. THERESA HEIRSHBERG

DATE REPORTED: 04/04/24

METHOD BLANK REPORT FOR LAB I.D.: 240328-39/40/41/42 (COMPOSITE),
240328-43/44/45/46 (COMPOSITE), 240328-47/48/49/50 (COMPOSITE)

Organochlorine Pesticides Analysis

Method: EPA 8081A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Aldrin	ND	0.001	1
alpha-BHC	ND	0.001	1
beta-BHC	ND	0.001	1
gamma-BHC (Lindane)	ND	0.001	1
delta-BHC	ND	0.001	1
alpha-Chlordane	ND	0.001	1
gamma-Chlordane	ND	0.001	1
Total Chlordane (Technical)	ND	0.005	1
4,4'-DDD	ND	0.001	1
4,4'-DDE	ND	0.001	1
4,4'-DDT	ND	0.001	1
Dieldrin	ND	0.001	1
Endosulfan I	ND	0.001	1
Endosulfan II	ND	0.001	1
Endosulfan Sulfate	ND	0.001	1
Endrin	ND	0.001	1
Endrin Aldehyde	ND	0.001	1
Endrin Ketone	ND	0.001	1
Heptachlor Epoxide	ND	0.001	1
Heptachlor	ND	0.001	1
Methoxychlor	ND	0.001	1
Toxaphene	ND	0.020	1

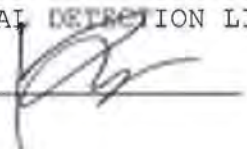
COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

EPA 8081A QA/QC Report

Matrix: **Soil/Solid/Liquid(Oil)**
Unit: **mg/Kg (ppm)**

Date Analyzed: **3/28/24**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **240328-LCS1/2**

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP %RPD	ACP %REC
Gamma-BHC	0.000	0.00500	0.00530	106%	0.00526	105%	1%	0-20%	70-130
Aldrin	0.000	0.00500	0.00520	104%	0.00512	102%	2%	0-20%	70-130
4,4-DDE	0.000	0.00500	0.00525	105%	0.00505	101%	4%	0-20%	70-130

Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
Gamma-BHC	0.00500	0.00509	102%	75-125
Aldrin	0.00500	0.00501	100%	75-125
4,4-DDE	0.00500	0.00500	100%	75-125
Dieldrin	0.00500	0.00503	101%	75-125

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		MB	240321-1	240326-8	240327-1	240327-2	240327-3	240327-4
Tetra-chloro-meta-xylene	50-150	100%	90%	102%	102%	84%	94%	98%
Decachlorobiphenyl	50-150	97%	88%	192%*	92%	86%	91%	96%

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		240327-5	240327-6	240328-4,5	240328-7,8	240328-10,11	240328-13,14	240328-39-42
Tetra-chloro-meta-xylene	50-150	108%	117%	104%	109%	114%	115%	96%
Decachlorobiphenyl	50-150	100%	106%	92%	90%	95%	107%	135%

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		240328-43-46	240328-47-50					
Tetra-chloro-meta-xylene	50-150	109%	118%					
Decachlorobiphenyl	50-150	94%	104%					

S.R. = Sample Result

* = Surrogate fail due to matrix interference (If Marked)

spk conc = Spike Concentration

Note: LCS, MS, MSD are in control therefore results are in control.

%REC = Percent Recovery

ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

Analyzed and Reviewed By: 

Final Reviewer: 

LABORATORY REPORT

CUSTOMER: **Enercon Services, Inc.**
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: **Remington**

PROJECT No.: **ENC-240101**

MATRIX: SOIL

DATE RECEIVED: 03/28/24

SAMPLING DATE: 03/27/24

DATE EXTRACTED: 04/02-03/24

REPORT TO: MS. THERESA HEIRSHBERG

DATE ANALYZED: 04/03/24

DATE REPORTED: 04/04/24

SAMPLE I.D.: **B1/2/3/4-0.5 (Composite)**

LAB I.D.: **240328-39/40/41/42 (Composite)**

Organophosphorus Pesticides Analysis

Method: EPA 8141A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Azinphos Methyl	ND	0.05	1
Bolstar (Sulprofos)	ND	0.05	1
Chlorpyrifos	ND	0.05	1
Coumaphos	ND	0.05	1
Demeton-O	ND	0.05	1
Demeton-S	ND	0.05	1
Diazinon	ND	0.05	1
Dichlorvos	ND	0.05	1
Disulfoton	ND	0.05	1
Ethoprop	ND	0.05	1
Fensulfothion	ND	0.05	1
Fenthion	ND	0.05	1
Merphos	ND	0.05	1
Methyl Parathion	ND	0.05	1
Mevinphos	ND	0.10	1
Naled	ND	0.10	1
Phorate	ND	0.05	1
Ronnel	ND	0.05	1
Tetrachlorvinphos (Stirophos)	ND	0.05	1
Tokuthion (Prothiofos)	ND	0.05	1
Trichloronate	ND	0.05	1

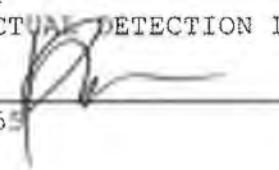
COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: 

CAL-DHS ELAP CERTIFICATE No.: 1555

LABORATORY REPORT

CUSTOMER: **Enercon Services, Inc.**
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: **Remington**

PROJECT No.: **ENC-240101**

MATRIX: SOIL

DATE RECEIVED: 03/28/24

SAMPLING DATE: 03/27/24

DATE EXTRACTED: 04/02-03/24

REPORT TO: MS. THERESA HEIRSHBERG

DATE ANALYZED: 04/03/24

DATE REPORTED: 04/04/24

SAMPLE I.D.: **B5/6/7/8-0.5 (Composite)**

LAB I.D.: **240328-43/44/45/46 (Composite)**

Organophosphorus Pesticides Analysis

Method: EPA 8141A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Azinphos Methyl	ND	0.05	1
Bolstar (Sulprofos)	ND	0.05	1
Chlorpyrifos	ND	0.05	1
Coumaphos	ND	0.05	1
Demeton-O	ND	0.05	1
Demeton-S	ND	0.05	1
Diazinon	ND	0.05	1
Dichlorvos	ND	0.05	1
Disulfoton	ND	0.05	1
Ethoprop	ND	0.05	1
Fensulfothion	ND	0.05	1
Fenthion	ND	0.05	1
Merphos	ND	0.05	1
Methyl Parathion	ND	0.05	1
Mevinphos	ND	0.10	1
Naled	ND	0.10	1
Phorate	ND	0.05	1
Ronnel	ND	0.05	1
Tetrachlorvinphos (Stiropfos)	ND	0.05	1
Tokuthion (Prothiofos)	ND	0.05	1
Trichloronate	ND	0.05	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____

CAL-DHS ELAP CERTIFICATE No.: 1555

LABORATORY REPORT

CUSTOMER: **Enercon Services, Inc.**
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: **Remington**

PROJECT No.: **ENC-240101**

MATRIX: **SOIL**

DATE RECEIVED: **03/28/24**

SAMPLING DATE: **03/27/24**

DATE EXTRACTED: **04/02-03/24**

REPORT TO: **MS. THERESA HEIRSHBERG**

DATE ANALYZED: **04/03/24**

DATE REPORTED: **04/04/24**

SAMPLE I.D.: **B9/10/11/12-0.5 (Composite)**

LAB I.D.: **240328-47/48/49/50 (Composite)**

Organophosphorus Pesticides Analysis

Method: **EPA 8141A**

Unit: **mg/Kg = Milligram Per Kilogram = PPM**

PARAMETER	SAMPLE RESULT	PQL	DF
Azinphos Methyl	ND	0.05	1
Bolstar (Sulprofos)	ND	0.05	1
Chlorpyrifos	ND	0.05	1
Coumaphos	ND	0.05	1
Demeton-O	ND	0.05	1
Demeton-S	ND	0.05	1
Diazinon	ND	0.05	1
Dichlorvos	ND	0.05	1
Disulfoton	ND	0.05	1
Ethoprop	ND	0.05	1
Fensulfothion	ND	0.05	1
Fenthion	ND	0.05	1
Merphos	ND	0.05	1
Methyl Parathion	ND	0.05	1
Mevinphos	ND	0.10	1
Naled	ND	0.10	1
Phorate	ND	0.05	1
Ronnel	ND	0.05	1
Tetrachlorvinphos (Stiophos)	ND	0.05	1
Tokuthion (Prothiofos)	ND	0.05	1
Trichloronate	ND	0.05	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY: _____

CAL-DHS ELAP CERTIFICATE No.: 1555

METHOD BLANK REPORT

CUSTOMER: Enercon Services, Inc.
4111 Broad St., Suite 210
San Luis Obispo, CA 93401
Tel: (805) 443-7641 E-Mail: THeirshberg@Enercon.com

PROJECT: Remington

PROJECT No.: ENC-240101

MATRIX: SOIL

DATE RECEIVED: 03/28/24

SAMPLING DATE: 03/27/24

DATE EXTRACTED: 04/02-03/24

REPORT TO: MS. THERESA HEIRSHBERG

DATE ANALYZED: 04/03/24

DATE REPORTED: 04/04/24

METHOD BLANK REPORT FOR LAB I.D.: 240328-39/40/41/42 (COMPOSITE),
240328-43/44/45/46 (COMPOSITE), 240328-47/48/49/50 (COMPOSITE)

Organophosphorus Pesticides Analysis

Method: EPA 8141A

Unit: mg/Kg = Milligram Per Kilogram = PPM

PARAMETER	SAMPLE RESULT	PQL	DF
Azinphos Methyl	ND	0.05	1
Bolstar (Sulprofos)	ND	0.05	1
Chlorpyrifos	ND	0.05	1
Coumaphos	ND	0.05	1
Demeton-O	ND	0.05	1
Demeton-S	ND	0.05	1
Diazinon	ND	0.05	1
Dichlorvos	ND	0.05	1
Disulfoton	ND	0.05	1
Ethoprop	ND	0.05	1
Fensulfothion	ND	0.05	1
Fenthion	ND	0.05	1
Merphos	ND	0.05	1
Methyl Parathion	ND	0.05	1
Mevinphos	ND	0.10	1
Naled	ND	0.10	1
Phorate	ND	0.05	1
Ronnel	ND	0.05	1
Tetrachlorvinphos (Stirophos)	ND	0.05	1
Tokuthion (Prothiofos)	ND	0.05	1
Trichloronate	ND	0.05	1

COMMENTS:

DF = DILUTION FACTOR

PQL = PRACTICAL QUANTITATION LIMIT

ACTUAL DETECTION LIMIT = PQL X DF

ND = NON-DETECTED OR BELOW THE ACTUAL DETECTION LIMIT

DATA REVIEWED AND APPROVED BY:

CAL-DHS ELAP CERTIFICATE No.: 1555

Enviro-Chem, Inc.

1214 E. Lexington Avenue, Pomona, CA 91766 Tel (909)590-5905 Fax (909)590-5907

EPA 8141A QA/QC Report

Matrix: **Solid/Soil/Sludge/Liquid**

Date Analyzed: **4/3/2024**

Unit: **mg/Kg (PPM)**

Matrix Spike (MS)/Matrix Spike Duplicate (MSD)

Spiked Sample Lab I.D.: **240328-39~42 MS/MSD**

Analyte	S.R.	spk conc	MS	%REC	MSD	%REC	%RPD	ACP %RPD	ACP %REC
Ethoprop	0.00	0.250	0.259	104%	0.243	97%	6%	0-30%	40-140
Phorate	0.00	0.250	0.215	86%	0.209	84%	3%	0-30%	40-140
Ronnel	0.00	0.250	0.235	94%	0.227	91%	3%	0-30%	40-140
Bolstar	0.00	0.250	0.218	87%	0.213	85%	2%	0-30%	40-140

Lab Control Spike (LCS) Recovery:

Analyte	spk conc	LCS	% REC	ACP %REC
Ethoprop	0.250	0.227	91%	40-140
Phorate	0.250	0.207	83%	40-140
Ronnel	0.250	0.224	90%	40-140
Bolstar	0.250	0.213	85%	40-140

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.		M-BLK	240328-39~42	240328-43~46	240328-47~50	240329-16	240329-17		
Tributyl Phosphate	40-140	77%	98%	95%	89%	70%	70%		
Triphenyl Phosphate	40-140	92%	131%	124%	120%	93%	94%		

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.									
Tributyl Phosphate	40-140								
Triphenyl Phosphate	40-140								

Surrogate Recovery	ACP%	%REC	%REC	%REC	%REC	%REC	%REC	%REC	%REC
Sample I.D.									
Tributyl Phosphate	40-140								
Triphenyl Phosphate	40-140								

S.R. = Sample Result

spk conc = Spike Concentration

%REC = Percent Recovery

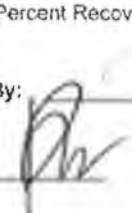
ACP %RPD = Acceptable Percent RPD Range

ACP %REC = Acceptable Percent Recovery Range

* = Surrogate fail due to matrix interference (If Marked)

Note: LCS, MS, MSD are in control therefore results are in control.

Analyzed and Reviewed By: 

Final Reviewer: 

Enviro-Chem, Inc. Laboratories
 1214 E. Lexington Avenue,
 Pomona, CA 91766
 Tel: (909) 590-5905 Fax: (909) 590-5907
CA-DHS ELAP CERTIFICATE #1555

Turnaround Time
☐ Same Day
☐ 24 Hours
☐ 48 Hours
☐ 72 Hours
☒ 1 Week (Standard)
 Other:

SAMPLE ID	LAB ID	SAMPLING DATE TIME		MATRIX	No. OF CONTAINERS	TEMPERATURE	PRESERVATION	Analysis Required	COMMENTS
B1-0.5	240328-39	3/27/24	1142	Soil	1	40	N/A		Composite #1 for OCPs-OPPS
B2-0.5	-40		1122						
B3-0.5	-41		1058					X	
B4-0.5	-42		1041						
B5-0.5	-43		1020						Composite #2 for OCPs-OPPS
B6-0.5	-44		1005						
B7-0.5	-45		1210					X	
B8-0.5	-46		1230						
B9-0.5	-47		1443						Composite #3 for OCPs-OPPS
B10-0.5	-48		1506						
B11-0.5	-49		1522					X	
B12-0.5	-50		1540						
B1-2	-51		1151					X	
B2-2	-52		1130					X	
B3-2	-53		1110					X	

Company Name: Emerson Services, Inc.
 Address: 4111 Beard St, Suite 210
 City/State/Zip: San Luis Obispo, CA 93401

Project Contact: Theresa Heirshberg
 Tel: 805-443-7641
 Fax/Email: theirshberg@emerson.com

Sampler's Signature: Matthew Penkhan
 Project Name/ID: Remington ENC-240101

Relinquished by: <u>Matthew Penkhan</u>	Received by: <u>[Signature]</u>	Date & Time: <u>3/28/24 2:45</u>	Instructions for Sample Storage After Analysis: ☐ Dispose of ☐ Return to Client ☐ Store (30 Days) ☐ Other:
Relinquished by:	Received by:	Date & Time:	
Relinquished by:	Received by:	Date & Time:	

CHAIN OF CUSTODY RECORD

Date: 3/28/24

WHITE WITH SAMPLE • YELLOW TO CLIENT

CA-DHS ELAP CERTIFICATE #1555

Other:

Relinquished by:

Received by:

Date & Time:

ENC-240101

☐ Other:

WHITE WITH SAMPLE • YELLOW TO CLIENT

Page 2 of 2

APPENDIX G
RESUMES



Beth P. Ullom, P. G.

Principal Technical Specialist

Professional Years of Experience - 45

EDUCATION: M.S. Geology/Geophysics, Kent State University
B.S. Geosciences (Geophysics Option), *Cum laude*, University of Texas at Dallas
B.A. Biological Sciences, Indiana University

PROFESSIONAL ASSOCIATIONS: Professional Geologist: Pennsylvania (#005148), Virginia (# 002073)

NOTABLE SKILLS: Geochemical, geological, geophysical, and biological science consulting expertise

SUMMARY: Ms. Ullom is a Principal Technical Specialist for ENERCON. Due to her educational and experience background over a lengthy career, she works across company divisions to provide expertise in geology, geophysics and biology to the Energy and Nuclear Services Groups within the company. She manages projects as diverse as geotechnical drilling to wetland delineation, and mentors junior staff in their performance of these types of projects.

ENERCON PROFESSIONAL EXPERIENCE

Senior Technical Specialist-Environmental Services Group Ms. Ullom is a Principal Technical Specialist for ENERCON's ERES Group in the Utilities and Industrial Division of the Energy Group. In this capacity, she manages or performs and reports on Phase I and Phase II environmental site assessments (ESAs), performs senior technical review of ESAs and other reports, auditing of oil and gas facilities, corridor studies, and management of wetland delineations, stormwater sampling, groundwater well installation and sampling, geotechnical drilling, Tier II reporting, and environmental compliance studies for SPCC plans. Ms. Ullom has extensive experience with geophysical surveys, including GPR, seismic reflection, magnetic and EM surveys, many of which were performed for utility customers. The responsibilities of her role include the preparation of stand-alone environmental proposals, as well as proposals in conjunction with other company divisions and disciplines, including the Power Delivery Group and the Nuclear Services Group.

Merger and Acquisition Due Diligence: During multi-year projects, managed and performed field work for several of Enercon's major oil and gas customers, which included visits to oil and gas well sites to determine the environmental condition of the properties proposed for asset acquisition and/or merger. Prepared Phase I ESA reports in substantial compliance with current version of ASTM-1527.

Oil and Gas Clients Environmental Compliance and NEPA Studies: Managed and performed environmental auditing and NEPA clearance investigations for the siting of hundreds of conventional and unconventional oil and gas well sites and pipelines in the Marcellus and Utica Shale plays in Pennsylvania and Ohio for Enercon's oil and gas upstream and midstream customers. The work included site audits for Clean Water Act Compliance, including wetland and stream delineation, threatened and endangered species identification, and acquisition of relevant clearances and permits through state and Federal regulatory agencies.

Corridor Studies and Geotechnical Site Assessments: For Enercon's power and utility customers, prepared transmission line corridor (routing) studies, which included preparation of reports of reviews of environmental, demographic, and cultural features along proposed line routes. Managed geotechnical site assessments, including geophysical studies, surveying, and geotechnical drilling and laboratory testing for transmission lines and nuclear power plant sites.



PREVIOUS PROFESSIONAL EXPERIENCE

BRS 02/2019-11/15/2019 Hunker Pennsylvania **Manager, Environmental Services**

Tier II Reporting and SPCC plan preparation: Managed the data acquisition and reporting of Tier II reporting for hundreds of wells for confidential major oil and gas operator in Ohio. Trained junior staff to perform reporting in the future. Managed data acquisition and site visits for SPCC plan preparation for major oil and gas operators in Ohio. Prepared SPCC plans.

Wetland Delineations: Managed wetland delineations and characterization of WOTUS for major oil and gas operators in Pennsylvania. Provided senior technical review of reports.

Tri-County Engineering (wholly owned subsidiary of ENERCON) 2015-2019, Hunker, Pennsylvania **Environmental Manager**

Oil and gas permitting and reporting services: For Tri-County's oil and gas customers in Pennsylvania and Ohio, management of annual Tier II reporting, preparation of SPCC plans, geotechnical assessments, wetland delineations, cultural assessments, threatened and endangered species studies and Phase I Environmental Site Assessments for major oil and gas operators.

Phase I Environmental Site Assessments: Management of performance of ESAs for Tri-County's oil and gas and commercial customers in the eastern U.S. Senior technical review of ESAs performed by others for major banking client.

Compliance: Management and training of staff to perform water sampling for the start-up of a gas-fired power plant for major gas utility client.

Restore America 2008- 2011, Ashland, Kentucky and Cape Girardeau, Missouri **Manager, Environmental Services**

Geochemical, geological, geophysical, occupational safety and environmental consulting tasks: Used knowledge of environmental and OSHA compliance issues which included worker health and safety and control of hazardous and regulated materials on the job site, to assist multiple industrial, building trade, and commercial customers achieve compliance in multiple states.

Presentation of safety, environmental and geological topic seminars: At request of municipal and commercial customers provided training seminars on topics including "Environmental Compliance (Phase I and II Environmental Site Assessments, Phase III-Remediation)," "Geologic Hazards," "New Madrid Seismic Zone Earthquakes," "Asbestos, Mold, and Lead Based Paint," "Wetlands."

Interface with regulatory agencies: Regular and successful interface with Ohio EPA, Ohio DOL, Missouri DNR, Missouri DOL, Federal OSHA, MSHA, USEPA, US Army Corps of Engineers



Bowser Morner Engineering 2005-2008- Dayton, Ohio

Senior Environmental Scientist III, Project Manager - Environmental Division - Engineering Department

Geological and environmental consulting tasks: Managed multi-task assignments consisting of geophysical and geological site characterizations and hydrogeologic site assessments, geotechnical drilling, wetland determination and delineation, and design and installation of numerous groundwater monitoring wells, underground storage tank closures, Phase I and Phase II environmental site assessments, as well as remediation activities in multiple states in the U.S. Sites included construction and demolition debris landfills, solid waste landfills, industrial and manufacturing facilities, retail gasoline stations, food manufacturing facilities, public schools, municipal facilities, dry cleaners, large acreage public and private properties. Prepared proposals in response to requests for projects ranging in size from simple environmental site assessments to remediation of a steel mill.

Regulatory compliance: Assessment and permitting consulting in multiple states, including Ohio, Kentucky, Tennessee, Pennsylvania, New York, New Jersey, and Indiana. Interfaced with environmental, natural resources, and other regulatory agencies in multiple states, and with representatives of the USEPA and US Army Corps of Engineers. Preparation and/or management of preparation of environmental permits and license applications for numerous construction and demolition debris landfills and two industrial residual waste landfills in Ohio.

Expert Witness: Arbitration testimony, including expertise in wetland characterization, related to siting of landfills, which resulted in successful outcome for customers. Prepared exhibits, maps, and expert witness reports related to geology, hydrogeology and wetlands issues.

Technical Reporting: Preparation of technical reports and review of reports prepared by others for projects ranging from Phase I ESA's to complex Phase II site assessments as well as remediation projects and geologic and hydrogeologic site assessments, wetland delineations, and NEPA reports.

Vadose Research, Inc., 1989-2005, Canton, Ohio

Co-Owner and Corporate Project Manager, Vadose Research, Inc., Canton, OH

Project Management: Provided oversight of all aspects of project work for this family business from sales effort to client contact to project initiation, management, reporting and completion. Versatility with multiple disciplines ranging from geology and geophysics to chemical analyses, human environmental risk, microbiology, and occupational safety. Prepared proposals for residential, commercial, industrial, state, and federal customers. Managed technical and administrative staff.

Regulatory Compliance: Used extensive knowledge of various Federal and State regulations to assist customers gain regulatory compliance in multiple states, including Ohio, Pennsylvania, New York, West Virginia, Kentucky, Indiana, Tennessee, Nevada, and Montana

Expert Witness: Expert witness services related to the decommissioning of a large industrial facility where soil and groundwater had been impacted by regulated chemicals.

Environmental Site Assessment: Performed or managed hundreds of Phase I environmental site assessments according to current version of ASTM E 1527. Performed or managed Phase II environmental site assessments for sites with soil, surface water and/or groundwater suspected or known to be contaminated with regulated substances; designed groundwater monitoring systems for Phase II sampling; managed asbestos and lead based paint testing through qualified subcontractors and prepared reports where appropriate; managed and reported results for testing for bacteria and mold in commercial and residential facilities. Provided peer review of environmental due diligence documents



prepared by others for commercial and industrial clients and groups such as insurance companies.

Soil Vapor Assessments: Designed and performed soil gas surveys and analysis of soil gas samples using gas chromatography. Prepared reports of findings and recommendations.

Ohio Voluntary Action Program: Managed field work and prepared reports of findings, under direction of Ohio VAP certified professional, associated with three Covenants Not to Sue in Ohio VAP

Site characterizations: Geological, geotechnical drilling, wetland determination and delineation, and installation of groundwater monitoring wells, underground storage tank closures, as well as remediation activities. Sites included construction and demolition debris landfills, solid waste landfills, industrial and manufacturing facilities, lead smelters, gun ranges, retail gasoline stations, food manufacturing facilities, public schools, municipal facilities, dry cleaners, large acreage, and linear public and private properties.

Merger and acquisition due diligence and environmental assessment: Site auditing and reporting for oil and gas well fields, individual wellheads, compressor stations, and tank facilities associated with oil and gas wells in New York, Pennsylvania, Ohio, West Virginia, and Virginia for major oil and gas producer. Managed and reported results of environmental testing for contamination of groundwater following drilling of new oil and gas wells.

Environmental compliance: Site auditing and permitting for air, water, disposal, etc., including Title V air permits, PTIs, PTOs, SWPPPs, SPCC plans, 404 permits and 401 water quality permits

Geophysical Site Assessments: Designed and managed acquisition of geophysical data, including seismic reflection and refraction, ground penetrating radar, borehole radar, and gravity and magnetic data as well as processing and reporting results of those surveys for commercial, industrial, and oil and gas clients.

Contract research: In-depth research and investigation for technical reports, including research for commercial and industrial clients on specialized topics such as solvent detection, natural attenuation of hazardous materials, and gas detection for earthquake prediction.

Guest Professor, 2004, Kent State University, Stark Campus, North Canton, OH

Taught physical and environmental geology and associated laboratories

Adjunct Faculty, Professor, 1990-1994, University of Akron, Wayne College, Orrville, OH

Taught physical and environmental geology and associated laboratories. Developed survey courses in hazardous waste, petroleum contaminated soils, earthquakes.

Consultant, 1986-1989, Canton, OH

Independent consultant in geology and geophysics while in graduate school

Geophysical Research Team Member, 1986, University of Texas at Dallas, Richardson TX

Performed gravity data and seismic velocity analyses, and seismic survey at Nevada Test Site

Geophysical Analyst, 1983-1985, Placid Oil Company, Dallas, TX

Team member performing seismic data digitizing, interpretation, processing, mapping, velocity analyses, and collation of drilling data- Chuckchi Sea, Beaufort Sea, Gulf of Mexico



Brief Bio

During her 45-year career, Ms. Ullom has acquired unique expertise in geological, geophysical, and environmental disciplines due to her educational and experience background. She is a registered professional geologist in Pennsylvania (#PG005148) and Virginia (#002073). With technical expertise in environmental and geologic site characterization, Ms. Ullom has supervised, performed, and reported results of a large number of Phase I through complex Phase II site assessments, geophysical site characterization activities, geological site characterizations and hydrogeologic site assessments, monitoring well installation, geotechnical drilling, wetland determination and delineation, and environmental remediation projects. Ms. Ullom has also served as an expert witness about many of the same issues. She regularly performs consulting to the energy sector, including oil and gas, renewables, and utility customers, for site characterization issues related to geology and geophysics, soils, surface water, groundwater, and wetlands, and successfully interfaces on a routine basis with regulatory agencies at the Federal, State, and local levels.

THERESA L. HEIRSHBERG, MS PG

Principal – Environmental Geologist

Professional Years of Experience – Thirty years

EDUCATION:

Bachelor of Science in Geology, Arizona State University

- ❖ Mineralogical Student of Year
- ❖ Student Representative to Faculty

Master of Science in Geology, University of California Los Angeles

- ❖ Thesis Topic: Saugus Formation in Ventura Basin of Southern California – Petrographic Analysis

California Professional Geologist No.8712

Oregon Registered Geologist No.G2886

Ventura County Well Inspector

Theresa L. Heirshberg is a Professional Geologist licensed in the states of California and Oregon. Ms. Heirshberg performs environmental assessments that conform to the published American Society for Testing and Materials (ASTM) standards - ASTM E1527-21 Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process and ASTM E2600-22 Standard Guide for Vapor Encroachment Screening on Property Involved in Real Estate Transactions. Ms. Heirshberg has prepared Phase I and II ESAs for all property types but has specialized expertise in complex industrial properties, master portfolios, gas stations, auto repair facilities, sites within NPLs, and oil fields. Ms. Heirshberg provides clients detailed comprehensive quality reports, regulatory guidance, and efficient solutions. Ms. Heirshberg has over thirty years of experience with Southern California geology and participates in local, regional and national geologic organizations such as an active member of the ASTM E1527-21 committee and former President Coast Geological Society as well as treasurer (two-year term), vice president and past president.

PROFESSIONAL EXPERIENCE

Professional Geological Work Experience:

Environmental Geology

- ❖ Phase I ESAs – Conventional and SBA Loans
- ❖ Phase II Subsurface Investigations – Soil, Soil Vapor, Groundwater
- ❖ Phase III Remediation Investigations
- ❖ Hydrogeology – Groundwater Investigations
- ❖ Technical Reviews – Environmental Reports
- ❖ TSAs for Commercial Real Estate
- ❖ Environmental Compliance

Environmental Assessments - Responsibilities include proposal writing including scope and cost estimate, environmental site health & safety preparations and implementation, fieldwork, boring logs, report preparation, responsible signatory as Professional Geologist.

Petroleum Geology

- ❖ Petroleum Geology Asset Potential & Mudlog Reviews - Determined asset potential from mudlog data; review of mudlogs for finalization including microscope analysis of samples; health & safety program implementation for oil field mudlogging operations including writing of H&S manual, conducting in-office meetings and training, and completing documentation for reporting to clients' databases; review existing and enacted California state environmental regulations pertaining to oil fields.

Engineering Geology

- ❖ Mining – Regional Availability & Aggregate Potential
- ❖ Engineering Geology – Landslide Stability & Groundwater Flow



Example Projects:

- ❖ ENERCON's Medical Facility Fuel Storage Tank Upgrades (Berkeley, California): Residual contamination related to removal of former underground storage tank associated with construction project upgrading to an aboveground storage tank. Oversaw all remedial activities including soil excavation, soil and groundwater sampling, groundwater monitoring; preparation and responsible signatory on submitted reports to the Regional Water Quality Control Board (RWQCB); coordinated with regulatory agency; and achieved case closure for site.
- ❖ ENERCON's Rancho Conejo Project (Newbury Park, California): Installation of two new groundwater monitoring wells at a site that was redeveloped but formerly part of a larger remedial investigation. The monitoring wells were installed to depths greater than 50-feet. Performed all onsite activities including pre-marking, site safety officer, logging borings, sampling, directing drilling crew, coordinating with laboratory, and overseeing well development activities. Prepared, finalized, and stamped boring logs submitted via driller to state well records, the monitoring wells installation report submitted to the Los Angeles Regional Water Quality Control Board, and the well inspector report submitted to Ventura County Public Works Agency.
- ❖ ENERCON's Site Redevelopment Project (South Gate, California): Department of Toxic Substances Control (DTSC) and South Coast Air Quality Management District (AQMD) agencies are overseeing complex remedial activities consisting of removal of impacted soil and assessing subsurface soil vapor and groundwater conditions. The site, due to past operations, was found to have asbestos impacted soil from broken tiles. Key responsibilities include person of responsible charge to DTSC and project manager of all aspects including financials, site coordination, oversight of field and office staff, and preparation of field log summaries and monitoring and site completion reports. During remedial activities, ENERCON is responsible for the monitoring of air quality pertaining to asbestos and fugitive dust, directing areas of excavation including as necessary over-excavation to achieve visual clearance for asbestos, sampling of visual cleared soils for confirmation asbestos analysis, and overseeing the proper disposal of the generated hazardous waste. Prior to remediation, impacted soil required extensive characterization in preparation to determine the appropriate landfill for waste disposal. In addition to asbestos, some metal impacts to soil were found. On behalf of owner, EPA IDs were obtained for the disposal of waste generated from the site under signed manifests. AQMD required all excavation activities at the site for removal of the asbestos impacted soil to be performed by hand digging. Excavation activities are ongoing at this time with 209 field days performed with an estimate completion date of approximate one year from start. Additional onsite field work has consisted of several groundwater monitoring events to characterized groundwater; abandonment of one groundwater monitoring well that was within the footprint of the proposed future building; soil vapor survey with soil sampling to provided additional delineation of volatile organic compounds within shallow soils and determine via human health risk assessment if mitigation measure beyond the proposed vapor barrier are necessary.
- ❖ Oil Field Phase I ESA (Los Angeles County, California): Entire oil field and the associated tank farm were assessed as part of a real estate transaction. Performed all aspects of the Phase I ESA including management, sitewalk, interviews, obtaining historical documents, agency inquiries, figure preparation, writing report, finalizing and stamping. All well sites and oil field facilities were inspected. The associated tank farm was located at a separate site outside of the oil field. Over 20,000 pages of documents were reviewed and documented during the report preparation. The entire Phase I ESA was completed within four weeks solely by Ms. Heirshberg.
- ❖ Phase I ESA (Glendale, California): Phase I ESA was performed as part of bank due diligence upon foreclosure of subject property for lack of payment since inception of loan. Performed all the historical research, agency inquiries, and report write-up. Property owner would not allow site access since in foreclosure; therefore, no sitewalk was performed. In review of all the historical and agency data there was no indication of any environmental concerns. Very little was noted in the city directories pertaining to past occupants of the subject property but one listing showed the name of a larger business operation located on an adjacent block that suggested it was part of that larger facility. An internet search, which was not common practice at the time, using the subject property address and adjacent business name revealed an USEPA environmental lien was placed upon the subject property prior to the original loan inception date. If the one city directory listing had not been researched further than ASTM standard practice, then the Phase I ESA would have had no RECs and the bank client would have assumed the liability of the lien with the completion of foreclosure.

- ❖ Numerous Phase I ESAs (Various Locations) for Gas and Service Stations: Performed all aspects of the Phase I ESAs including management, sitewalk, interviews, obtaining historical documents, agency inquiries, figure preparation, writing report, finalizing and stamping. Inspection of these facilities required complete review of all onsite documentation including business plan, HASP plan, training documents, Spill Prevention Plan (SPCC), Safety Data Sheets (SDS), tank integrity testing, and waste management records such as disposal of waste oil or maintenance of clarifier. Agency records such as fire department and air quality are key records for review at such facilities. Air quality agencies maintain permits for operation such as a service station storage and dispensing of gasoline, flare system, amine treating, etc., and documentation on compliance and emissions. Fire department maintain records for inspections, storage tanks, and hazardous materials used onsite.
- ❖ Numerous Large Acreage Phase I ESAs (Various Rural Locations in United States) for siting of wind and solar farms. Performed all aspects of the Phase I ESA including management, sitewalk, interviews, obtaining historical documents, agency inquiries, figure preparation, writing report, finalizing and stamping.
- ❖ Numerous Phase II ESAs (Various Locations): Performed all aspects of the Phase II ESA including management, field work, logging soils, sampling, figure and boring log preparation, writing report, finalizing and stamping. Characterization of soil cutting and produced water for proper disposal.
- ❖ Phase II ESA (Santa Barbara, California): Performed all aspects of this Phase II ESA including management, field work, logging soils, sampling, figure and boring log preparation, writing report, finalizing and stamping. Multiple field events were necessary to fulfill agency requirements. Achieved case closure with final findings resulting in an environmental activity and use limitation (AUL) restriction placed on the property deed.
- ❖ Environmental Compliance for numerous Construction Sites, Existing Businesses, and Oil Field Operations: Activities include inspections, permitting such as for NPDES and AQMD, preparation of site-specific plans such as SMP and HASP, sampling at facilities to ensure compliance, and review and evaluation of business plans.
- ❖ Santa Monica Mountain Landslide (Los Angeles, California): Performed an engineering geology study of an active landslide in order to stabilize it. Key responsibilities pertained to groundwater flow documentation including hydrographs, cross-sections, and regional weather influence.
- ❖ Mining Sites (Ventura County, California): Contracted to review geology of specific parcels as potential aggregate mining sites. Tasks included scouting accessibility; mapping units; bulk sampling with grain size percentages (i.e. sand, gravel, cobbles, boulders present); analyzing the mineralogical and rock compositions of samples; determining quality of aggregate potential based on ASTM concrete standards and regional availability.

Professional Safety Implementation and Training:

- ❖ Health & Safety for Oil Fields and Environmental Sites
- ❖ Completed Safety Training Programs - Oil Field Passport
- ❖ OSHA 40-hour HAZWOPER

Professional Organizations

- ❖ Coast Geological Society
- ❖ API California Coastal Chapter
- ❖ Pacific Section AAPG
- ❖ ASTM

APPENDIX F

PRELIMINARY WATER QUALITY MANAGEMENT PLANS

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Water Quality Management Plan (WQMP)

Project Name:

Our Lady of Peace - Church

Prepared for:

**Roman Catholic Bishop of Orange
13280 Chapman Ave
Garden Grove, CA 92840**

Prepared by:

Proactive Engineering Consultants

Engineer Amy Jaramillo Registration No. 94608

**27051 Towne Centre Dr, Suite 270
Foothill Ranch, CA 92610
949-259-5708**

Prepared on:

November 2025

Preliminary Water Quality Management Plan (PWQMP)
Our Lady of Peace - Church

Project Owner's Certification			
Permit/ Application No.	00955110-PCPU	Grading Permit No.	N/A
Tract/Parcel Map No.	N/A	Building Permit No.	N/A
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			N/A

This Water Quality Management Plan (WQMP) has been prepared for Roman Catholic Bishop of Orange by Proactive Engineering. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the **Santa Ana Region**. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:			
Title	Deacon Javier H. Rodriguez		
Company	Roman Catholic Bishop of Orange		
Address	13280 Chapman Ave Garden Grove, CA 92840		
Email	jrodriguez@rcbo.org		
Telephone #	714-282-3032		
Signature		Date	

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Section V Inspection/Maintenance Responsibility for BMPs.....	24
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Attachments

Attachment A	WQMP Site Plan
Attachment B	Worksheets & Calculations
Attachment C	BMP Fact Sheets & Details
Attachment D	Geotechnical Report
Attachment E	2 Year Storm Hydrology

Section I Discretionary Permit(s) and Water Quality Conditions

Provide discretionary permit and water quality information. Refer to Section 2.1 in the *Technical Guidance Document (TGD)* available from the Orange County Stormwater Program (ocwatersheds.com).

Project Information			
Permit/ Application No.	00955110-PCPU	Tract/Parcel Map No.	N/A
Additional Information/ Comments:	N/A		
Water Quality Conditions			
Water Quality Conditions (list verbatim)	N/A		
Watershed-Based Plan Conditions			
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	N/A		

Section II Project Description

II.1 Project Description

Description of Proposed Project				
Development Category (Verbatim from WQMP):	New development projects that create 10,000 square feet or more of impervious surface. This category includes commercial, industrial, residential housing subdivisions, mixed-use, and public projects on private or public property that falls under the planning and building authority or the Permittees.			
Project Area (ft²): 133,294	Number of Dwelling Units: N/A		SIC Code: 8661	
Narrative Project Description:	The proposed project replaces an existing temporary church structure with 3 new buildings (church, rectory, parish hall). Project also includes site landscaping, a plaza and two level parking garage.			
Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	66,211 sf	64%	37,026 sf	36%
Post-Project Conditions	30,537 sf	23%	102,757 sf	77%
Drainage Patterns/Connections	Once developed, there will be a series of on-site inlets through the parking lot that will connect to the on-site private storm drain system. The plaza will have small area drain inlets that will also connect to the on-site system. The storm drain will flow from east to the west confluencing near the entry off Remington. The storm drain pipe will then continue across the adjacent church parcel just outside of the existing public utility easement along Remington and connect to the existing catch basin at the corner of Roosevelt and Remington. From there it flows in a mainline RCP storm drain in Roosevelt that ranges from 24” to 48”. This pipeline eventually outlets into Central Irvine Channel, then Peters Canyon Channel, into San Diego Creek and then into Newport Bay.			

II.2 Potential Stormwater Pollutants

Pollutants of Concern			
Pollutant	Circle One: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	☒ E	☐ N	
Nutrients	☒ E	☐ N	
Heavy Metals	☐ E	☒ N	
Pathogens (Bacteria/Virus)	☐ E	☒ N	
Pesticides	☒ E	☐ N	
Oil and Grease	☒ E	☐ N	
Toxic Organic Compounds	☒ E	☐ N	
Trash and Debris	☒ E	☐ N	

II.3 Hydrologic Conditions of Concern

☐ No - Show map

☒ Yes - Describe applicable hydrologic conditions of concern below.

Streams downstream of the project are potentially susceptible to hydromodification, this includes parts of Peters Canyon Channel, San Diego Creek Channel and Newport Bay.

The 2 year 24 hour post development runoff volume is more than 5% greater than the existing condition 2 year 24 hour runoff volume.

II.4 Post Development Drainage Characteristics

Once developed, there will be a series of on-site inlets through the parking lot that will connect to the on-site private storm drain system. The plaza will have small area drain inlets that will also connect to the on-site system. The storm drain will flow from east to the west confluencing near the entry off Remington. The storm drain will then flow across the adjacent church parcel (being developed for residential use) adjacent to Remington and connect to the existing catch basin at the corner of Roosevelt and Remington. The downstream flow path will remain unchanged.

II.5 Property Ownership/Management

The property will be owned by the Roman Catholic Bishop of Orange and managed by Our Lady of Peace Korean Catholic Center.

Section III Site Description

III.1 Physical Setting

Planning Area/ Community Name	Our Lady of Peace
Location/ Address	14010 Remington
	Irvine, CA 92620
Land Use	Place of Worship
Zoning	Medium-High Density Residential
Acreage	3.06
Predominant Soil Type	C

III.2 Site Characteristics

<i>Precipitation Zone</i>	The Design Capture Storm Depth is 0.80" based on OCTGD Rainfall Zone Figure XVI-1.
<i>Topography</i>	The site is relatively flat with a general grade of 1-2% from northwest to southeast.
<i>Drainage Patterns/Connections</i>	The site generally drains from the west to the east. Today it sheet flows over much of a barren field. There are a series of on-site drainage inlets that connect to a small on-site storm drain system and eventually connect to the existing catch basin on Remington (at the corner of Remington and Roosevelt). From there it flows in a mainline RCP storm drain in Roosevelt that ranges from 24" to 48". This pipeline eventually outlets into Central Irvine Channel, then Peters Canyon Channel, into San Diego Creek and then into Newport Bay. Part of the project is a Parcel Map to subdivide the existing parcel into 2 separate pieces. The existing and proposed drainage patterns can be

	found in Attachment E hydrology maps. The majority of what will be the church property flows to the same location at the central entry driveway in both the existing and proposed condition. There is a portion in the south in the existing condition is considered offsite drainage onto the proposed residential project. For this reason the existing and proposed drainage areas are not exactly the same.
<i>Soil Type, Geology, and Infiltration Properties</i>	The soil is primarily clayey sand, silty sand and sandy clay. The site is underlain by Young Alluvial Fan Deposits (Qyf).
<i>Hydrogeologic (Groundwater) Conditions</i>	Groundwater was found at approximately 54' deep. Historic high groundwater is estimated at greater than 40'.
<i>Geotechnical Conditions (relevant to infiltration)</i>	Infiltration testing produced rates of 0.01 and 0.02 inches/hour without a factor of safety. Therefore, infiltration is not feasible. (See report in Attachment D)
<i>Off-Site Drainage</i>	N/A
<i>Utility and Infrastructure Information</i>	Sewer & water are served by IRWD. Public storm drain in the adjacent roadways is owned and maintained by the City of Irvine.

III.3 Watershed Description

Receiving Waters	Peters Canyon Channel San Diego Creek Newport Bay
303(d) Listed Impairments	San Diego Creek Reach 1 (Benthic Community Effects, DDT, Indicator Bacteria, Malathion, Nutrients, Sedimentation/Siltation, Selenium, Toxaphene, Toxicity) Newport Bay Upper (Chlordane, Copper, DDT, Indicator Bacteria, Malathion, Nutrients, PCBs, Sedimentation/Siltation, Toxicity) Newport Bay Lower (Chlordane, Copper, DDT, Indicator Bacteria, Nutrients, PBCs, Toxicity)
Applicable TMDLs	All waterbodies listed above are requirement status: Category 5A - a TMDL is required, but not yet completed Category 5B - being addressed by USEPA approved TMDL
Pollutants of Concern for the Project	Suspended-Solid/ Sediment Nutrients Pesticides Oil and Grease Toxic Organic Compounds Trash and Debris
Environmentally Sensitive and Special Biological Significant Areas	N/A

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?		YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	N/A		

Project Performance Criteria (continued)

If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	• Post-development runoff volume for the two-year frequency storm does not exceed that of the predevelopment condition by more than five percent • Time of concentration of post-development runoff for the two-year storm event is not less than that for the predevelopment condition by more than five percent
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	• Priority Projects must infiltrate, harvest and use, evapotranspire, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume). • A properly designed biotreatment system may only be considered if infiltration, harvest and use, and evapotranspiration (ET) cannot be feasibly implemented for the full design capture volume. In this case, infiltration, harvest and use, and ET practices must be implemented to the greatest extent feasible and biotreatment may be provided for the remaining design capture volume.
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	• If it is not feasible to meet LID performance criteria through retention and/or biotreatment provided on-site or at a sub-regional/regional scale, then treatment control BMPs shall be provided on-site or offsite prior to discharge to waters of the US. Sizing of treatment control BMP(s) shall be based on either the unmet volume after claiming applicable water quality credits, if appropriate (See Section 7.II-3.1 Water Quality Credits) and as calculated in TGD Appendix VI. If treatment control BMPs can treat all of the remaining unmet volume and have a medium to high effectiveness for reducing the primary POCs, the project is considered to be in compliance; a waiver application and participation in an alternative program is not required. • If the cost of providing treatment control BMPs greatly outweighs the pollution control benefits they would provide, a waiver of treatment control and LID requirements can be requested and alternative compliance approaches must be used to fulfill the remaining unmet volume.

Calculate LID design storm capture volume for Project.	<u>LID Design Storm Capture Volume (DCV)</u> Defined as: $V = C \times d \times A \times 43,560 \text{ sf/ac} \times 1/12 \text{ in/ft}$ Where: V = runoff volume during the design storm event, cu-ft C = runoff coefficient = $(0.75 \times \text{imp} + 0.15)$ imp = impervious fraction of drainage area (ranges from 0 to 1) d = storm depth (inches) A = tributary area (acres) The Design Capture Volume for the project is as follows: 85th percentile, 24-hr storm depth = d = 0.80 inches Drainage Area = A = 3.06 acres Imperviousness = imp = 0.77 $V = 3.06 \text{ ac} \times 0.80 \text{ inches} \times ((0.75 \times 0.77) + 0.15) \times 43,560 \text{ sf/ac} \times 1/12 \text{ in/ft}$ $V = 6,465 \text{ cu-ft}$ <i>Note: Volume calculated is for reference only, LID BMP solution will be a flow based proprietary biotreatment solution. See Attachment B for calculations.</i>
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IV.2. SITE DESIGN AND DRAINAGE PLAN

Where feasible, impervious area dispersion was utilized to allow for evapotranspiration and incidental infiltration of runoff, prior to discharging to the storm drain system.

Infiltration was considered as a BMP for the development but due to low measured rates the project is infeasible for infiltration per the Geotechnical Report in Attachment D

Rainwater harvesting and re-use was considered as a BMP. The total landscape area does not require enough demand to justify the use of harvesting BMPs. See Worksheet J in Attachment B.

Therefore, bio-treatment was selected as the proposed BMP to meet LID performance criteria. Runoff from the project will be collected and treated by modular wetland systems. Bio treatment unit details are included in Attachment C.

The entire site was treated as one drainage management area. One unit at the downstream end will treat the required flows and the peak flows will bypass the water quality treatment system. The WQMP site showing the BMP location and overall drainage pattern can be found in Attachment A.

DMA 1:

A=3.1 acres

Imp=0.77

C=0.73

Qdesign=0.52cfs

IV.3 LID BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

IV.3.1 Hydrologic Source Controls

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☒
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☒
Other:	☐

HSC-3 Street Trees

Trees will be planted within the parking lot and central plaza area. These trees will intercept and provide some volume reduction benefits for the project.

Impervious Area Reduction

The central church plaza area will incorporate as much landscape and pervious area as possible to provide aesthetic and water quality benefits.

NOTE: DCV reduction credit has not been determined for these areas as their benefits are incidental and the areas not specifically designed to retain runoff.

IV.3.2 Infiltration BMPs

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

Per the Geotech report in Attachment D infiltration testing produced rates of 0.01 and 0.02 inches/hour without a factor of safety. Therefore, infiltration is not feasible.

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

Name	Included?
All HSCs; <i>See Section IV.3.1</i>	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

Due to the small landscape area onsite harvest and re-use is not practical or economical. Refer to Worksheet J in Attachment B.

IV.3.4 Biotreatment BMPs

Name	Included?
Bioretention with underdrains	☐
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☒
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

The LID DCV criteria will be met by using a flow-based biotreatment BMP solution. One unit will treat the whole site's required flows. Peak flows will bypass the water quality system. See Attachment B for calculations and Attachment C for system details.

IV.3.5 Hydromodification Control BMPs

BMP Name	BMP Description
Oversized storm drain pipes	In order to mitigate the peak flow differential from the proposed condition down to the existing condition storm drain pipelines will be oversized. The additional pipe volume will serve as a detention system and an orifice/weir structure will be installed to outlet pipes at a rate similar to the existing condition.

IV.3.8 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☒	☐	
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☒	☐	
N6	Local Industrial Permit Compliance	☐	☒	Not an industrial project
N7	Spill Contingency Plan	☐	☒	No proposed hazardous materials onsite
N8	Underground Storage Tank Compliance	☐	☒	No underground storage
N9	Hazardous Materials Disclosure Compliance	☐	☒	No hazardous material onsite
N10	Uniform Fire Code Implementation	☐	☒	Proposed facility does not propose to store toxic or highly toxic compressed gas.
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	No loading docks
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	No retail gas

IV.3.9 Structural Source Control BMPs

Fill out structural source control check box forms or provide a brief narrative explaining if Structural source controls were not used.

Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No storage areas proposed
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	No slopes/channels
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	Santa Ana Region
S6	Dock areas	☐	☒	No docks
S7	Maintenance bays	☐	☒	No bays
S8	Vehicle wash areas	☐	☒	No wash areas
S9	Outdoor processing areas	☐	☒	No outdoor processing
S10	Equipment wash areas	☐	☒	No wash areas
S11	Fueling areas	☐	☒	No fueling areas
S12	Hillside landscaping	☐	☒	No hillsides
S13	Wash water control for food preparation areas	☐	☒	No food prep
S14	Community car wash racks	☐	☒	No car washes

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the TGD for calculation methods for applying water quality credits.*

Description of Proposed Project				
Project Types that Qualify for Water Quality Credits (Select all that apply):				
☐ Redevelopment projects that reduce the overall impervious footprint of the project site.	☐ Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.		☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).	
☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).	☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned		☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).	
☐ Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.	☐ Developments in a city center area.	☐ Developments in historic districts or historic preservation areas.	☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.	☐ In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.
Calculation of Water Quality Credits (if applicable)	N/A			

IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

N/A

Section V Inspection/Maintenance Responsibility for BMPs

Fill out information in table below. Prepare and attach an Operation and Maintenance Plan. Identify the mechanism through which BMPs will be maintained. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies. *Refer to Section 7.II 4.0 in the Model WQMP.*

BMP INSPECTION/MAINTENANCE			
BMP	Responsible Party(s)	Inspection/Maintenance Activities Required	Minimum Frequency of Activities
HYDROLOGIC SOURCE CONTROL BMPs			
HSC-3 Street Trees	Owner	Conduct general inspection and maintenance monthly per routine landscaping maintenance activities. Trim trees as needed. Conduct bi-annual tree health evaluations.	After significant storm events and monthly with landscaping maintenance
BIOTREATMENT BMPs			
Proprietary Biotreatment	Owner	Comply with “Operations & Maintenance” by manufacturer. Attached with Final WQMP.	Before and after major storm events.
		Inspect unit for accumulated debris and sediment and plant health; remove trash; trim vegetation.	
		Scarify media to promote infiltration. Add additional mulch	
		Replace 3” to 6” of media layer.	10 years
NON-STRUCTURAL SOURCE CONTROL BMPs			
N1 Education for Property Owners, Tenants and Occupants	Owner	Educational materials will be provided to the owner. Materials shall include those shown in Section VII of this WQMP.	At project completion
N2 Activity Restrictions	Owner	Owner will follow activity restrictions to protect surface water quality.	Ongoing

Water Quality Management Plan (WQMP)
Our Lady of Peace - Church

N3 Common Area Landscape Management	Owner	Maintenance shall be consistent with City requirements; any fertilizer and/or pesticide usages shall be consistent with City and manufacturer guidelines for use of fertilizers and pesticides. Maintenance includes mowing, weeding, and debris removal. Trimming, replanting and replacement of mulch shall be performed on an as-needed basis. Trimmings, clippings, and other waste shall be properly disposed of off-site in accordance with local regulations. Materials temporarily stockpiled during maintenance activities shall be placed away from water courses and drain inlets.	Monthly and as needed
N4 BMP Maintenance	Owner	Maintenance of BMPs implemented at the project site shall be performed at the frequency prescribed in this WQMP. Records of inspections and BMP maintenance shall be maintained by the City and documented with the WQMP.	Ongoing
N11 Common Area Litter control	Owner	Litter patrol, violations investigation, reporting and other litter control activities shall be performed by the owner as needed and in conjunction with maintenance activities for common areas.	Ongoing
N12 Employee Training	Owner	Owner will train all current and new employees on maintenance procedures for all site BMPs	Ongoing
N14 Common Area Catch Basin Inspection	Owner	Catch basin inlets, area drains, curb-and-gutter systems and other drainage systems shall be inspected prior to October 1st of each year and after large storm events. If necessary, drains shall be cleaned prior to any succeeding rain events. 80% of private facilities shall be inspected and cleaned annually, with 100% of facilities inspected and maintained within a 2-year period.	Annually
N15 Street Sweeping	Owner	Parking lots and drive aisles will be swept and kept clear of debris.	Monthly

STRUCTURAL SOURCE CONTROL BMPs			
S1 Provide storm drain system stencilling and signage	Owner	As a part of the final civil engineering drawings, it will be required by the owner to stencil on all of the project's catch basins, where applicable in paved areas, the words, "No Dumping - Drains to Ocean." Storm drain stencils shall be inspected for legibility, at minimum, once prior to the storm season, no later than October 1st each year. Those determined to be illegible will be re-stencilled as soon as possible.	Annually
S3 - Trash & Waste Storage Areas	Owner	Trash areas shall be inspected to insure no leaks or spills from the trash containers. Drop inlet will be inspected and filters cleaned out.	Monthly/Quarterly (before/after major rain events)
S4 Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	Owner	In conjunction with routine maintenance activities, verify that landscape design continues to function properly by adjusting properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather, day or night time temperatures based on system specifications and local climate patterns.	Monthly

Section VI Site Plan and Drainage Plan

VI.1 SITE PLAN AND DRAINAGE PLAN

See Attachment A.

Include a site plan and drainage plan sheet set containing the following minimum information:

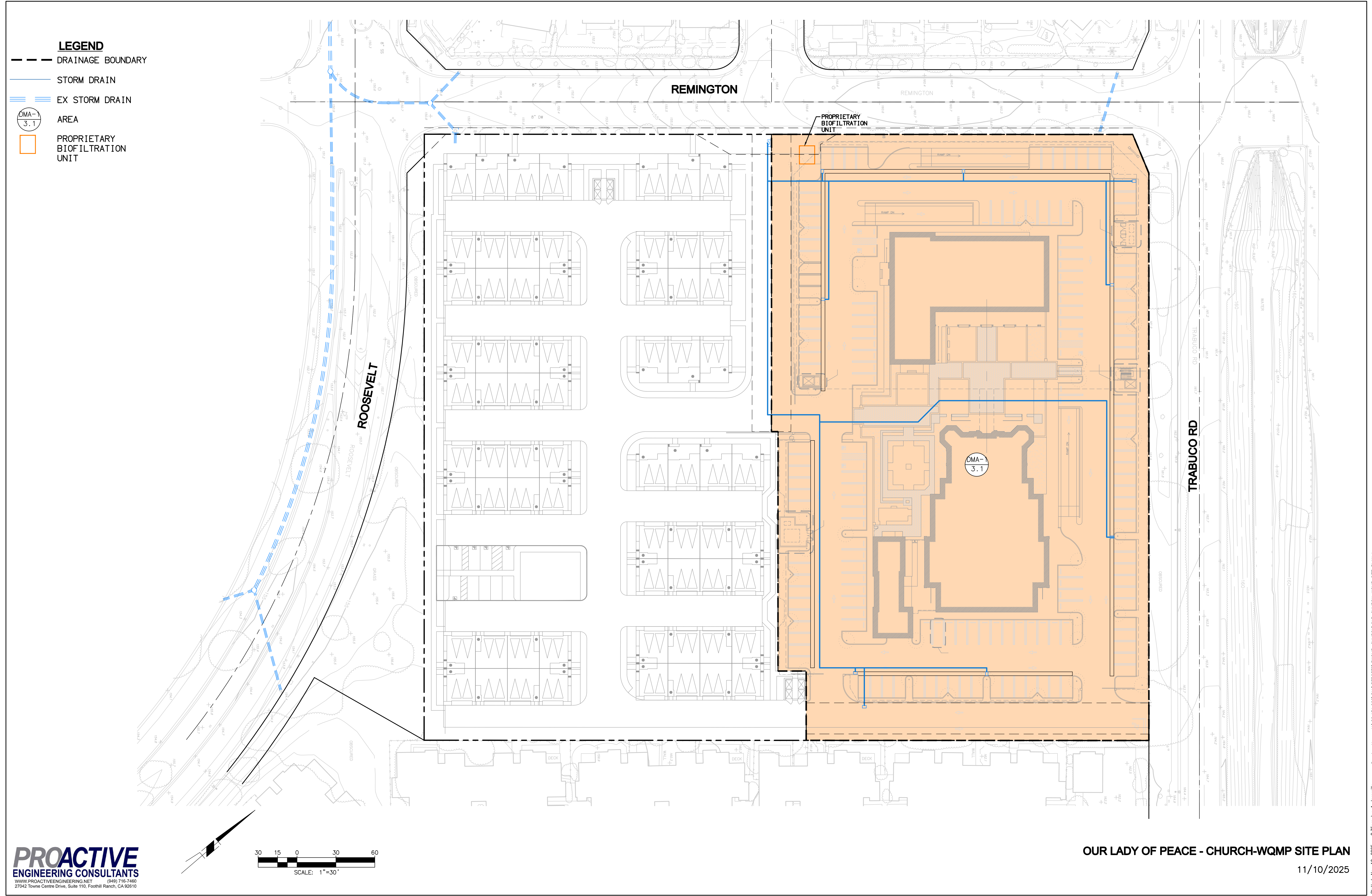
- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Drainage connections
- BMP details

Section VII Educational Materials

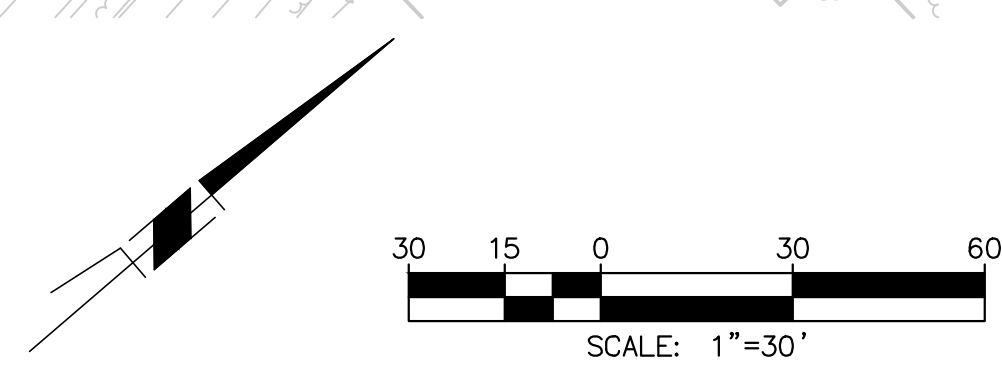
Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. For the copy submitted to the Permittee, only attach the educational materials specifically applicable to the project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	Check If Applicable	Business Material (http://www.ocwatersheds.com)	Check If Applicable
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☐	Proper Maintenance Practices for Your Business	☒
Household Tips	☐	Other Material	Check If Attached
Proper Disposal of Household Hazardous Waste	☐		
Recycle at Your Local Used Oil Collection Center (North County)	☐		☐
Recycle at Your Local Used Oil Collection Center (Central County)	☐		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☒		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☐		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☒		☐
Tips for Pet Care	☐		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☐		☐
Tips for Projects Using Paint	☐		☐

Attachment A: Site Plan



- LEGEND**
- DRAINAGE BOUNDARY
 - STORM DRAIN
 - == EX STORM DRAIN
 - DMA-1 3.1
 - PROPRIETARY BIOFILTRATION UNIT



Attachment B: Worksheets and Calculations

Worksheet D: Capture Efficiency Method for Flow-Based BMPs

Step 1: Determine the design capture storm depth used for calculating volume												
1	Enter the time of concentration, T_c (min) (See Appendix IV.2)	$T_c =$	8.90									
2	Using Figure III.4 , determine the design intensity at which the estimated time of concentration (T_c) achieves 80% capture efficiency, I_1	$I_1 =$	0.23	in/hr								
3	Enter the effect depth of provided HSCs upstream, d_{HSC} (inches) (Worksheet A)	$d_{HSC} =$	0	inches								
4	Enter capture efficiency corresponding to d_{HSC} , Y_2 (Worksheet A)	$Y_2 =$	0	%								
5	Using Figure III.4 , determine the design intensity at which the time of concentration (T_c) achieves the upstream capture efficiency(Y_2), I_2	$I_2 =$	0									
6	Determine the design intensity that must be provided by BMP, $I_{design} = I_1 - I_2$	$I_{design} =$	0.23									
Step 2: Calculate the design flowrate												
1	Enter Project area tributary to BMP (s), A (acres)	$A =$	3.1	acres								
2	Enter Project Imperviousness, imp (unitless)	$imp =$	0.77									
3	Calculate runoff coefficient, $C = (0.75 \times imp) + 0.15$	$C =$	0.73									
4	Calculate design flowrate, $Q_{design} = (C \times I_{design} \times A)$	$Q_{design} =$	0.52	cfs								
Supporting Calculations $0.73 \times 0.23 \text{ in/hr} \times 3.1 \text{ ac} \times 43,560 \text{ sqft/ac} \times 1 \text{ hr/60min} \times 1 \text{ min/60sec} \times 1 \text{ ft/12in} = 0.52 \text{ cfs}$												
Describe system:												
<table border="1"> <thead> <tr> <th>MODEL #</th> <th>DIMENSIONS</th> <th>WETLAND MEDIA SURFACE AREA (sq. ft.)</th> <th>TREATMENT FLOW RATE (cfs)</th> </tr> </thead> <tbody> <tr> <td>MWS-L-8-20</td> <td>9' x 21'</td> <td>252</td> <td>0.577</td> </tr> </tbody> </table>					MODEL #	DIMENSIONS	WETLAND MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)	MWS-L-8-20	9' x 21'	252	0.577
MODEL #	DIMENSIONS	WETLAND MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)									
MWS-L-8-20	9' x 21'	252	0.577									
Provide time of concentration assumptions:												
<pre> ===== END OF STUDY SUMMARY: TOTAL AREA(ACRES) = 3.1 TC(MIN.) = 8.90 EFFECTIVE AREA(ACRES) = 3.08 AREA-AVERAGED Fm(INCH/HR)= 0.03 AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.100 PEAK FLOW RATE(CFS) = 4.44 ===== ===== END OF RATIONAL METHOD ANALYSIS </pre>												

Figure III.4. Capture Efficiency Nomograph for Off-line Flow-based Systems in Orange County

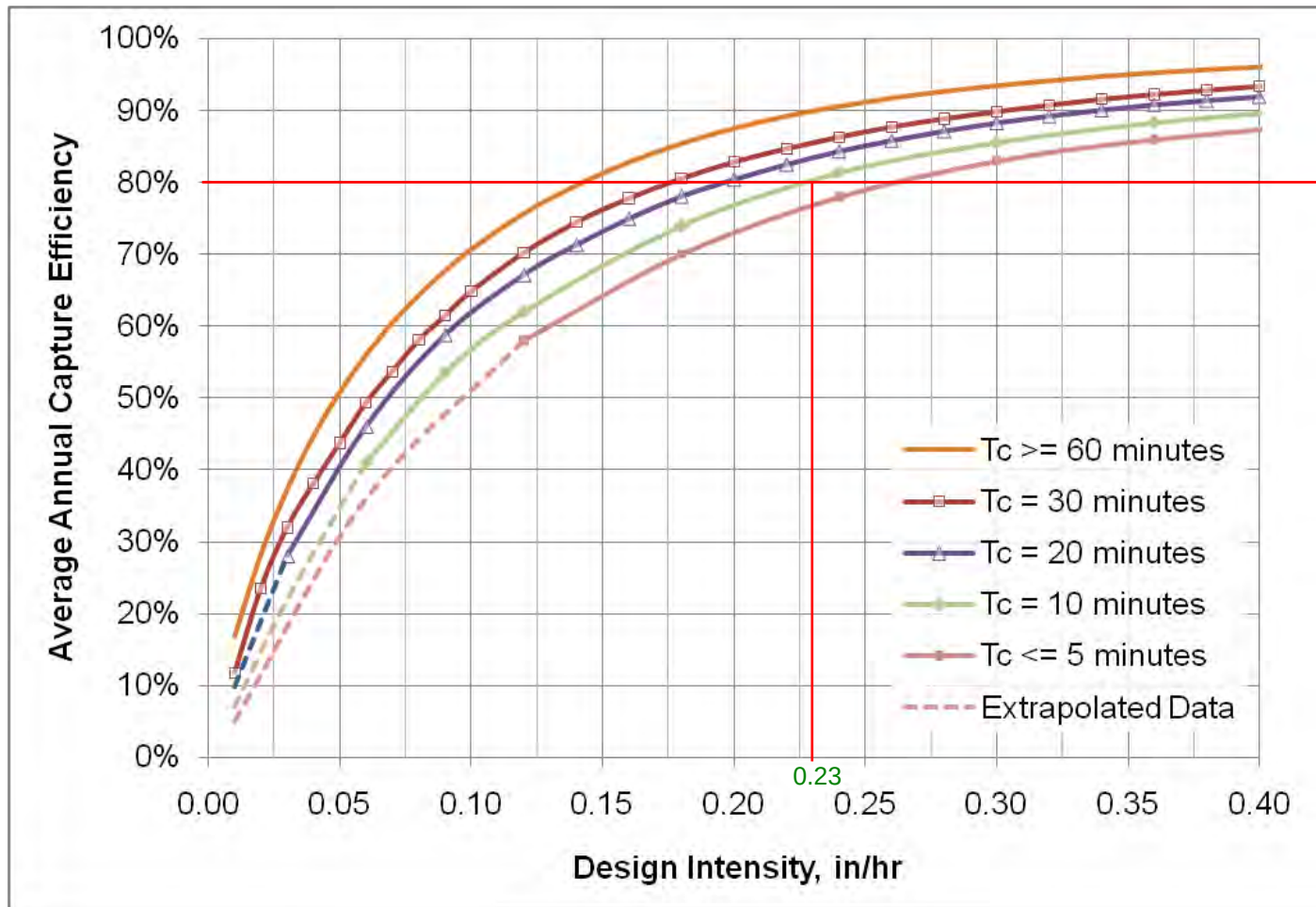


Table X.8: Minimum Irrigated Area for Potential Partial Capture Feasibility

General Landscape Type	Conservation Design: $K_L = 0.35$			Active Turf Areas: $K_L = 0.7$		
<i>Closest ET Station</i>	<i>Irvine</i>	<i>Santa Ana</i>	<i>Laguna</i>	<i>Irvine</i>	<i>Santa Ana</i>	<i>Laguna</i>
Design Capture Storm Depth, inches	Minimum Required Irrigated Area per Tributary Impervious Acre for Potential Partial Capture, ac/ac					
0.60	0.66	0.68	0.72	0.33	0.34	0.36
0.65	0.72	0.73	0.78	0.36	0.37	0.39
0.70	0.77	0.79	0.84	0.39	0.39	0.42
0.75	0.83	0.84	0.90	0.41	0.42	0.45
0.80	0.88	0.90	0.96	0.44	0.45	0.48
0.85	0.93	0.95	1.02	0.47	0.48	0.51
0.90	0.99	1.01	1.08	0.49	0.51	0.54
0.95	1.04	1.07	1.14	0.52	0.53	0.57
1.00	1.10	1.12	1.20	0.55	0.56	0.60

Worksheet J: Summary of Harvested Water Demand and Feasibility

1	What demands for harvested water exist in the tributary area (check all that apply):			
2	Toilet and urinal flushing		☒	
3	Landscape irrigation		☒	
4	Other: _____		☐	
5	What is the design capture storm depth? (Figure III.1)	d	0.8	inches
6	What is the project size?	A	3.06	ac
7	What is the acreage of impervious area?	IA	2.36	ac
For projects with multiple types of demand (toilet flushing, indoor demand, and/or other demand)				
8	What is the minimum use required for partial capture? (Table X.6)		650	gpd
9	What is the project estimated wet season total daily use?		Very low considering small landscape areas	gpd
10	Is partial capture potentially feasible? (Line 9 > Line 8?)		No	
For projects with only toilet flushing demand				
11	What is the minimum TUTIA for partial capture? (Table X.7)			
12	What is the project estimated TUTIA?			

Worksheet J: Summary of Harvested Water Demand and Feasibility

13	Is partial capture potentially feasible? (Line 12 > Line 11?)		
For projects with only irrigation demand			
14	What is the minimum irrigation area required based on conservation landscape design? (Table X.8)		ac
15	What is the proposed project irrigated area? (multiply conservation landscaping by 1; multiply active turf by 2)		ac
16	Is partial capture potentially feasible? (Line 15 > Line 14?)		
Provide supporting assumptions and citations for controlling demand calculation:			

Table X.6: Harvested Water Demand Thresholds for Minimum Partial Capture

Design Capture Storm Depth ¹ , inches	Wet Season Demand Required for Minimum Partial Capture ² , gpd per impervious acre
0.60	490
0.65	530
0.70	570
0.75	610
0.80	650
0.85	690
0.90	730
0.95	770
1.00	810

1 - Based on isopluvial map (See [XVI.1](#))

2 -Minimum Partial Capture is a performance standard whereby system performance exceeds 40 percent capture (See [Appendix XIII](#)) , such that the system must be considered for use even if it cannot achieve the full DCV.

Attachment C: BMP Fact Sheets & Details

BIO-5/BIO-7: PROPRIETARY BIOTREATMENT

Category: Biotreatment with Partial Infiltration (when accompanied by supplemental retention)

Biotreatment with No Infiltration (when used without supplemental retention)

Proprietary biotreatment BMPs are proprietary devices that are manufactured to treat stormwater. **Acceptance criteria for proprietary biotreatment BMPs are defined in [Appendix J](#).** Proprietary BMPs that do not meet these acceptance criteria are not permitted. In addition, proprietary biotreatment BMPs must meet the definition of biofiltration in order to be used as LID biotreatment BMPs. There are two configurations of proprietary biotreatment, as explained in the following subsections.

BIO-5: Proprietary Biotreatment with Enhanced Retention Configuration

As standalone systems, proprietary biotreatment BMPs typically provide negligible volume reduction. To be used as a “biotreatment BMP with partial infiltration,” these BMPs must be accompanied by a retention compartment. This could consist of several options:

- Permeable pavement upstream of the proprietary BMP
- Shallow infiltration gallery or chambers downstream of the BMP, connected to underdrains.
- Proprietary biotreatment downstream of a cistern for harvest and use.
- Use of adequate hydrologic source controls in the watershed to meet volume reduction targets (see Sizing section of this Fact Sheet).
- Other configurations that are determined to be appropriate to maximize the feasible volume reduction for the DMA.

Guidance for retention compartments is provided in other fact sheets, such as INF-5 (Permeable Pavement) and INF-6 (Underground Infiltration).

BIO-7: Standard Configuration without Supplemental Retention

For conditions that do not require partial infiltration, volume retention is not a performance goal. Acceptable proprietary biotreatment BMPs may be used as standalone systems. Guidance related to complementary retention can be disregarded.

Pollutant Removal Considerations

BMPs that meet the acceptance criteria in [Appendix J](#) are considered to provide adequate treatment for pollutants of concern. According to these criteria, there are different levels of treatment certification needed for different pollutants of concern.

Recommended Design Criteria and Considerations

Design Criteria	Intent/Rationale
☐ Sediment sources should be controlled prior to operation of the system.	Proprietary systems are susceptible to clogging similar to other BMPs. Systems should not be used in areas that will continue to receive elevated sediment loading following construction, such as from open space area.
☐ When accompanied by infiltration compartments, the ponding should not be higher than the underdrain elevation of the proprietary BMP.	This is intended to ensure that the complementary retention compartment does not reduce the hydraulic capacity of the proprietary biotreatment BMP.
☐ When accompanied by infiltration compartments, these infiltration BMPs must adhere to siting guidance found in the respective fact sheet for the BMP	Specific siting considerations apply to infiltration BMPs.
☐ Proprietary biotreatment systems typically do not require separate pretreatment	These BMPs typically include integrated mechanisms for pretreatment.
☐ Proprietary BMPs must be designed in a manner consistent with manufacturer recommendations and consistent with the design configuration that was tested as part of the BMP certification	Proprietary devices have device-specific design, installation, and maintenance details which must be followed for proper treatment results.
☐ In right of way areas, plant selection should not impair traffic sightlines or vehicle access.	Vegetation must not be prohibitive for typical vehicular movement and parking access needs.
☐ Manufacturer guidance on vegetation selection and establishment should be followed	Manufacturers have experience with plant survival in specific climates for the BMP-specific conditions.

Calculations and Sizing Method

Proprietary Biotreatment BMPs are flow-based BMPs. See [Appendix E](#) for acceptable sizing methods.

Supplemental retention elements (for [BIO-5](#) configuration) should be sized for one of the following targets, where possible:

- Approximately 40 percent long term volume reduction.
- Retention storage provided for approximately one-third of the DCV.
- Infiltration footprint (collective of all infiltrating elements of the project design) meeting target defined in [Section E.4.2](#).

Construction Guidance

Construction Guidance	Intent/Rationale
☐ Plans should include a construction sequence for the BMP. Revisions proposed by the contractor should be reviewed by the engineer. The construction sequence should address erosion control, utilities, BMP installation, inspections, testing and certifications, vegetation, stabilization, and post-construction monitoring.	Construction sequencing is critical to avoid issues/damage and allow appropriate inspections, testing, and certifications to be performed.
☐ Provide for inspection of buried infrastructure (e.g., underdrain, filter course) before it is buried.	It is impractical to inspect buried elements once they are covered.
☐ Fully stabilize sources of sediment within the tributary area (i.e., no exposed soil) prior to placing the finished BMP into service.	Sediment loading can seriously impair the capacity of the BMP.
☐ Allow plants and mulch to stabilize for as long as practicable (preferably several months) prior to placing the finished BMP into service.	Stabilization of the system allows plants to mature before stressing the system with stormwater loading.

O&M Activities and Frequencies

Activity	Frequency
GENERAL INSPECTIONS	
Remove trash and debris	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events ≥ 0.5 inches.
Identify excess erosion or scour	
Identify sediment accumulation that requires maintenance	
Inspect during storm event, when possible, to estimate treatment capacity and determine if premature bypass is occurring	
Evaluate plant health and need for corrective action	
Identify any needed corrective maintenance that will require site-specific planning or design	
OPERATION AND MAINTENANCE	
• O&M of proprietary BMPs must follow established manufacturer guidelines • O&M of accompanying retention BMPs should follow the guidelines established in the associated fact sheet for that BMP.	



Modular Wetlands[®] System Linear

A Stormwater Biofiltration Solution



OVERVIEW

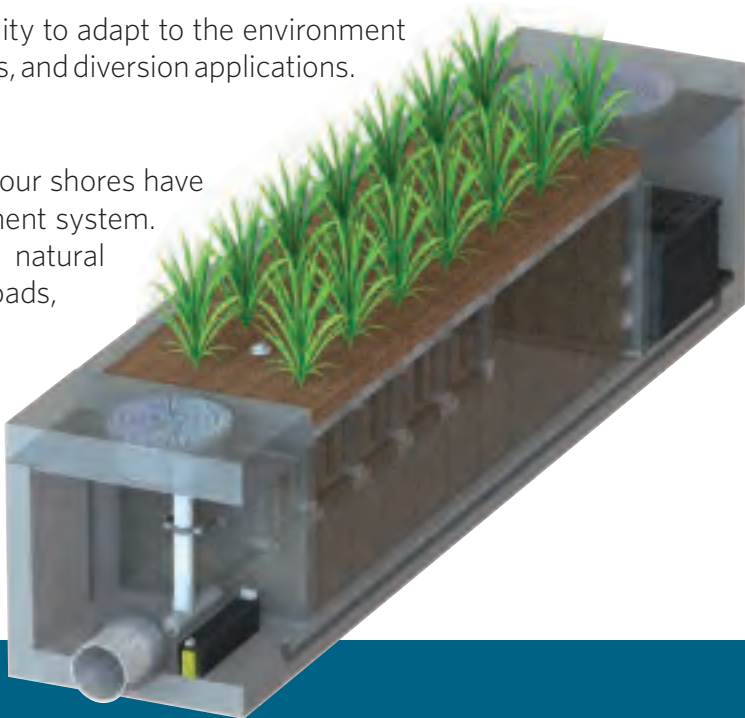
The Bio Clean Modular Wetlands® System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands® incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.

The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature’s stormwater treatment system. But as cities grow and develop, our environment’s natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature’s presence in urban areas, and rejuvenating waterways with the Modular Wetlands® System Linear.



PERFORMANCE

The Modular Wetlands® continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the Modular Wetlands® has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the Modular Wetlands® harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	69% REMOVAL OF TOTAL ZINC	38% REMOVAL OF DISSOLVED COPPER	64% REMOVAL OF TOTAL PHOSPHORUS	
45% REMOVAL OF NITROGEN	50% REMOVAL OF TOTAL COPPER	95% REMOVAL OF MOTOR OIL	67% REMOVAL OF ORTHO PHOSPHORUS	85% REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.



Washington State Department of Ecology TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft² loading rate. The highest performing BMP on the market for all main pollutant categories.



California Water Resources Control Board, Full Capture Certification

The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.



Virginia Department of Environmental Quality, Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.



Maryland Department of the Environment, Approved ESD

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.



MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.



Rhode Island Department of Environmental Management, Approved BMP

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

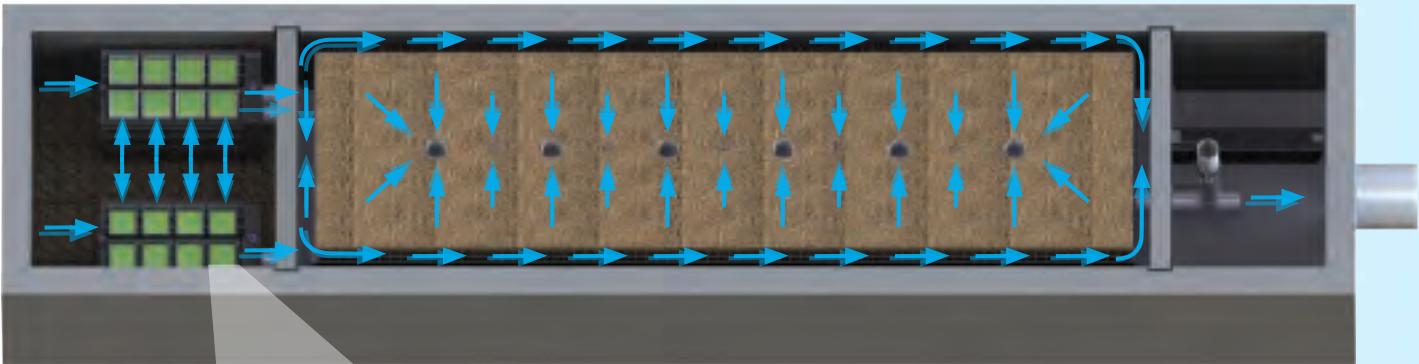


Figure 2,
Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

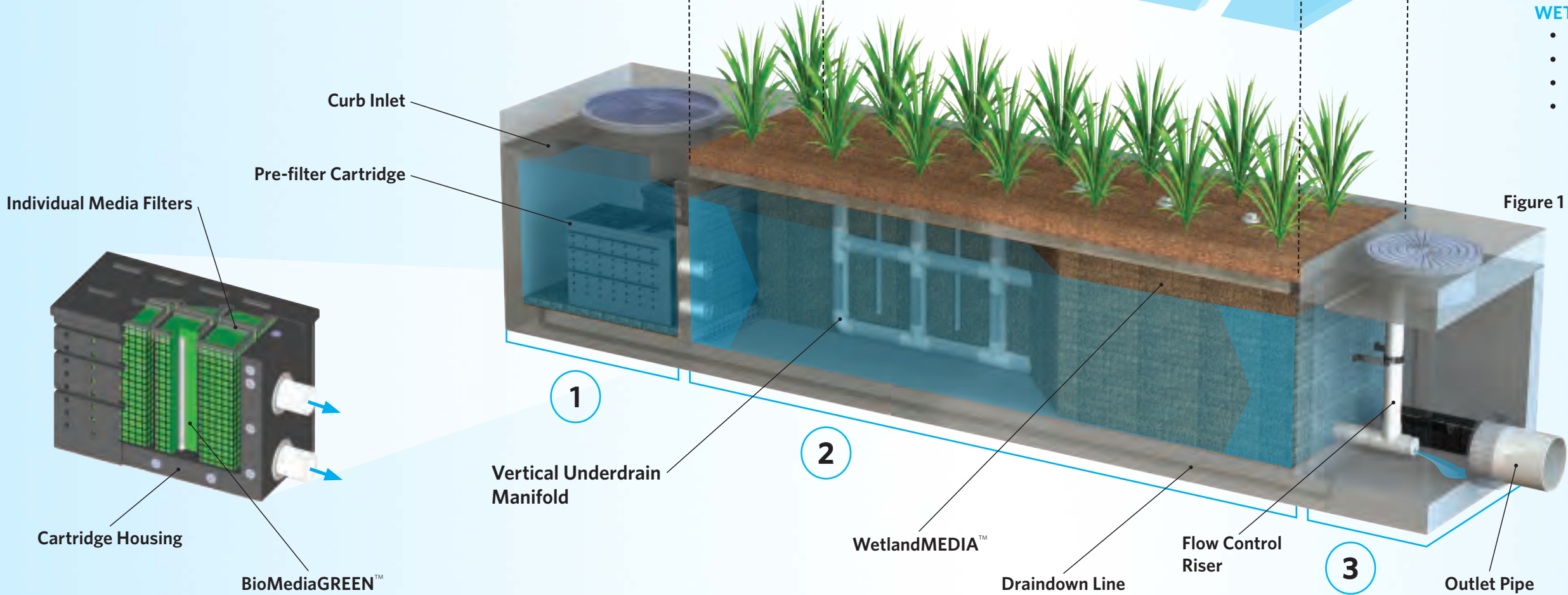
1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

PRE-FILTER CARTRIDGES

- Over 25 sq. ft. of surface area per cartridge
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber



2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated



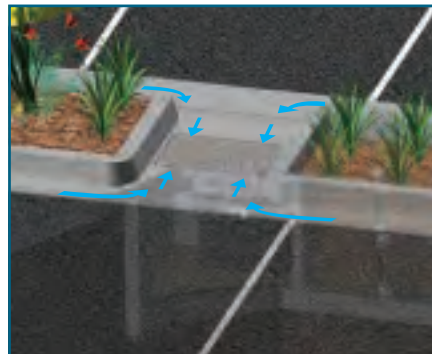
CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available “pipe-in” options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



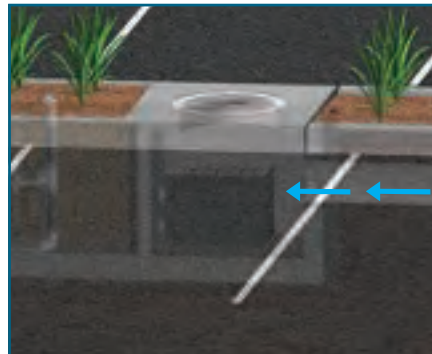
CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

The system’s patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/bioretention systems. Another benefit of the “pipe-in” design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.



DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

ORIENTATIONS

SIDE-BY-SIDE

The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.



END-TO-END

The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.



BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system’s treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

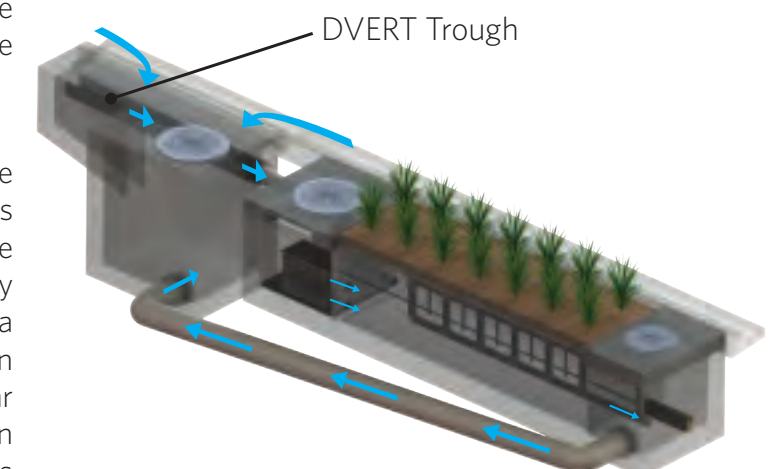
This traditional offline diversion method can be used with the Modular Wetlands® in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the Modular Wetlands® for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the Modular Wetlands® and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over



to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the Modular Wetlands® to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements. Since the Modular Wetlands® 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

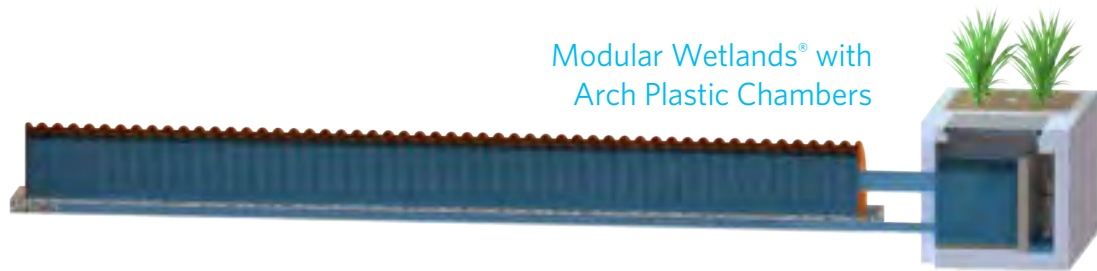
VOLUME-BASED DESIGNS

HORIZONTAL FLOW BIOFILTRATION ADVANTAGE



Modular Wetlands® with
Box Culvert Prestorage

The Modular Wetlands® System Linear offers a unique advantage in the world of biofiltration due to its exclusive horizontal flow design: Volume-Based Design. 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 systems 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. In the example above, the Modular Wetlands® is installed downstream of underground box culvert storage. Designed for the water quality volume, the Modular Wetlands® will treat and discharge the required volume within local draindown time requirements.



Modular Wetlands® with
Arch Plastic Chambers

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 Modular Wetlands®, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- BUILT-IN ORIFICE CONTROL STRUCTURE
- MEETS LID REQUIREMENTS
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.



INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The Modular Wetlands® has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.



STREETS

Street applications can be challenging due to limited space. The Modular Wetlands® is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.



COMMERCIAL

Compared to bioretention systems, the Modular Wetlands® can treat far more area in less space, meeting treatment and volume control requirements.



RESIDENTIAL

Low to high density developments can benefit from the versatile design of the Modular Wetlands®. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.



MIXED USE

The Modular Wetlands® can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

- Agriculture
- Reuse
- Low Impact Development
- Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the Modular Wetlands®, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.



A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION



The Modular Wetlands® is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE



Reduce your maintenance costs, man hours, and materials with the Modular Wetlands®. Unlike other biofiltration systems that provide no pretreatment, the Modular Wetlands® is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.



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Attachment D: Geotechnical Report

July 1, 2024

Project No. 23174-01

Roman Catholic Bishop of Orange

13280 Chapman Avenue
Garden Grove, CA 92840

***Subject: Preliminary Geotechnical Subsurface Evaluation, Proposed Church Development,
14010 Remington, Irvine, California***

In accordance with your request, LGC Geotechnical, Inc. has performed a geotechnical subsurface evaluation for the proposed church development located at 14010 Remington in the City of Irvine, California. This report summarizes the results of our background review, subsurface exploration, and geotechnical analyses of the data collected, and presents our findings, conclusions, and preliminary recommendations for the proposed church project.

If you should have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.



Barry Graham, CEG 2749
Project Geologist



Dennis Boratynec, GE 2770
Vice President



Branden Petersen, EIT
Senior Staff Engineer

DJB/BPP/BPG/amm

Distribution: (1) Addressee (electronic copy, wet signed copies can be provided upon request)

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1.0 INTRODUCTION

1.1 Purpose and Scope of Services

This report presents the results of our geotechnical subsurface evaluation for the proposed church development located at 14010 Remington in the City of Irvine, California (see Site Location Map, Figure 1). The purpose of our work was to collect subsurface data in order to confirm that the site can be developed from a geotechnical perspective. Our scope of services included:

- Review of pertinent readily available geotechnical information and geologic maps (Appendix A).
- Subsurface evaluation including excavation, sampling, and logging of four small-diameter hollow stem borings.
- Infiltration testing at two of the small-diameter hollow-stem borings.
- Laboratory testing of representative samples obtained during our subsurface evaluation (Appendix C).
- Geotechnical analysis and evaluation of the data obtained, including:
 - Suitability of the site for the proposed development from a geotechnical standpoint;
 - Description of the site geology, and subsurface soil and groundwater conditions;
 - Evaluation of the seismic conditions at the site, including seismic design criteria based on the 2022 California Building Code (CBC); and
 - Recommendations for remedial grading operations and site preparation.
- Preparation of this report presenting our findings, conclusions and recommendations with respect to the proposed site development.

1.2 Background/Project Description

The approximately 3-acre site is bound to the north by Trabuco Road, to the west by Remington, to the south by a parking lot for the associated church and open space and east by a residential development. Review of historical aerial photographs suggests the site was undeveloped farmland prior to 1980. By 1985, Roosevelt was constructed but the site remained undeveloped until 2000. The church and associated parking lot was completed by 2002. The site has essentially remained unchanged since then.

The proposed development will consist of a new parish hall, plaza, church, rectory, parking lot and other associated improvements. We understand that the proposed church development will have a basement approximately 9 feet deep while the other structures will be at grade with relatively light building loads (column and wall loads assumed to be a maximum of approximately 30 kips and 3 kips per lineal foot, respectively). At this time, we do not have any design cut/fill information, but we assume maximum design cuts will be a maximum of approximately 10 feet (for basement) and design fills will be less than 5 feet.

The recommendations provided herein are based upon the estimated structural loading, potential grade changes, and expected layout information above. We understand that the project plans are currently being developed at this time; LGC Geotechnical should be provided with updated project plans (including grading, foundation, retaining/basement walls, etc.) and

any changes to the assumed structural loads when they become available, in order to either confirm or modify the recommendations provided herein.

Note that an evaluation of the adjacent proposed residential site (LGC Geotechnical, 2024) was conducted at a similar time to the subject proposed church site. The limits of these sites can be found in Figure 2 - Boring Location Map. The laboratory test results from the adjacent residential evaluation were also included within this report.

1.3 Subsurface Evaluation

LGC Geotechnical performed a subsurface geotechnical evaluation of the site consisting of the excavation of 4 hollow-stem auger borings.

Four hollow-stem borings (HS-5, HS-6, I-3, and I-4) were drilled to depths ranging from approximately 10 to 70 feet below existing grade. An LGC Geotechnical representative observed the drilling operations, logged the borings, and collected soil samples for laboratory testing. The borings were excavated using a track-mounted drill rig equipped with 8-inch-diameter hollow-stem augers. Driven soil samples were collected by means of the Standard Penetration Test (SPT) and Modified California Drive (MCD) sampler generally obtained at 2.5 to 5-foot vertical increments. The MCD is a split-barrel sampler with a tapered cutting tip and lined with a series of 1-inch-tall brass rings. The SPT sampler and MCD sampler were driven using a 140-pound automatic hammer falling 30 inches to advance the sampler a total depth of 18 inches. The raw blow counts for each 6-inch increment of penetration were recorded on the boring logs. Bulk samples were also collected and logged at select depths for laboratory testing. At the completion of drilling, the borings were backfilled with the native soil cuttings and tamped. Some settlement of the backfill soils may occur over time.

The approximate locations of borings are shown on the Geotechnical Exploration Location Map (Figure 2). Boring logs are presented in Appendix B.

1.4 Field Percolation Testing

Two falling head field percolation tests (I-3 and I-4) were performed in the approximate locations indicated on our Geotechnical Map (Figure 2). Estimation of infiltration rates for the site was accomplished in general accordance with the guidelines set forth by the County of Orange County (2013). A 3-inch diameter perforated PVC pipe with filter sock was placed in the borehole, and the annulus was backfilled with gravel, including placement of approximately 2 inches of gravel at the bottom of the borehole. The infiltration wells were pre-soaked the day prior to testing. During the pre-test, if the water level drops more than 6 inches in 25 minutes for two consecutive readings, the test procedure for coarse-grained soils was followed. If the water level did not drop 6 inches in one or both pre-test readings, the procedure for fine-grained soils was followed. The procedure for coarse-grained soils requires performing the test for one hour and taking one reading every 10 minutes from a fixed reference point. The procedure for fine-grained soils requires performing the test for six hours and taking one reading every 30 minutes from a fixed reference point.

The pre-tests indicated the procedure for the fine-grained soils should be followed. The calculated infiltration is normalized relative to the three-dimensional flow that occurs within the field test to a one-dimensional flow out of the bottom of the boring only (i.e., "Porchet Method"). The measured infiltration rates (for feasibility purposes only) are provided in Table 1 below. Please note that infiltration is discussed in Section 4.8 and field data is provided in Appendix D.

Please note that the values provided in Table 1 do not include reduction factors associated with the test procedure, site variability, and long-term siltation plugging that are used to calculate the design infiltration rate.

TABLE 1
Summary of Field Infiltration Testing

Infiltration Test No.	Approx. Depth Below Existing Grade (ft)	Measured Infiltration Rate* (in./hr.)
I-3	10	0.02
I-4	10	0.01

*Measured Infiltration Rates Do Not Include Factor of Safety.

1.5 Laboratory Testing

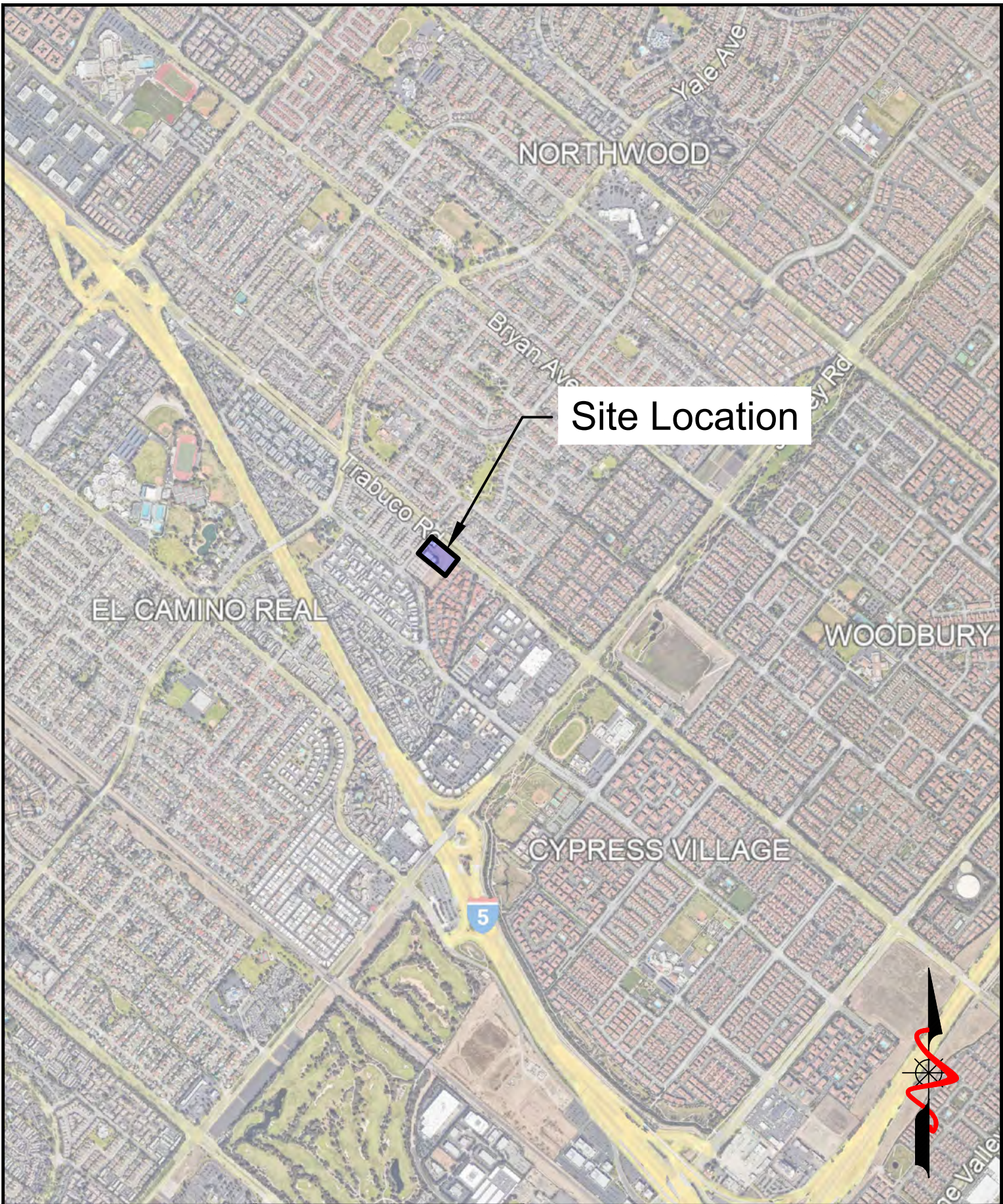
Laboratory testing was performed on representative soil samples obtained from our subsurface evaluation. Laboratory testing included in-situ moisture and density tests, fines content, expansion index, laboratory compaction, collapse and corrosion testing.

The following is a summary of the laboratory test results.

- Dry density of the samples collected ranged from approximately 80 pounds per cubic foot (pcf) to 106 pcf, with an average of approximately 94 pcf. Field moisture contents ranged from approximately 1 percent to 24 percent, with an average of approximately 13 percent.
- Two samples were tested for fines content indicated a fines content (passing No. 200 sieve) ranging from 48 to 68 percent. According to the Unified Soils Classification System (USCS), the tested samples are classified as "coarse" and "fine-grained" soil.
- Two Expansion Index (EI) tests were performed. The result indicated an EI value ranging from 112 to 135, corresponding to "High" to "Very High" expansion potential.
- Two laboratory compaction tests of near surface samples indicated a maximum dry density ranging from 115.0 to 117.5 with an optimum moisture content ranging from 12.5 to 14.0 percent.
- Six swell/collapse tests were performed. The plots are provided in Appendix C.
- Corrosion testing indicated soluble sulfate content of 95 parts per million (ppm), chloride content of 60 ppm, and pH value of 7.90, and minimum resistivity of 720 ohm-cm.

A summary of the results is presented in Appendix C. The moisture and dry density test results

are presented on the boring logs in Appendix B.



Site Location



FIGURE 1
Site Location Map

PROJECT NAME	Our Lady of Peace, Irvine
PROJECT NO.	23174-01
ENG. / GEOL.	DJB
SCALE	Not to Scale
DATE	July 2024

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The subject site is located along the southeastern margin of the Los Angeles Basin, a large structural depression within the Peninsular Ranges geomorphic province of California. The southeastern portion of Los Angeles Basin includes the Tustin Plain, a shallow alluvial portion of the coastal plain. The site is located in the eastern portion of the Tustin Plain in the Irvine subbasin, generally composed of approximately 200 to 700 feet of unconsolidated to semi-consolidated Pliocene, Quaternary, and Holocene-age alluvial sediments. Soils within this zone consist predominantly of interbedded discontinuous lenses of clay, silt, sand and gravel.

Regional geologic mapping and local topographic expressions do not indicate the presence of large-scale landslides within or adjacent to the project area.

2.2 Site Geology and Generalized Subsurface Conditions

Based on regional mapping (Morton, 2006) and our observations of the site, the subject site is underlain by Young Alluvial Fan Deposits (Qyf). In portions of the site, the young alluvial deposits are overlain by a thin veneer of older artificial fill that was placed during the previous development of the site. The depth of this older artificial fill was found to range from approximately 1 to 2 feet below existing grade during our evaluation but may be found at a deeper depth during construction, especially beneath the footprint of the existing church building. As indicated in our field explorations, site soils generally consisted of medium dense to dense clayey sands/silty sands and stiff to hard sandy clays.

It should be noted that borings are only representative of the location and time where/when they are performed, and varying subsurface conditions may exist outside of the performed locations. In addition, subsurface conditions can change over time. The soil descriptions provided should not be construed to mean that the subsurface profile is uniform, and that soil is homogenous within the project area. Descriptions of the subsurface conditions are presented on the boring and geotechnical trench logs located in Appendix B.

2.3 Groundwater

Groundwater was encountered at a depth of approximately 54 feet below existing grade. Historic high groundwater is estimated to be greater than 40 feet below existing ground surface (CGS, 2001).

In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present within the near-surface deposits due to local seepage or during rainy seasons. Groundwater conditions below the site may be variable, depending on numerous factors including seasonal rainfall, local irrigation, and groundwater pumping, among others.

2.4 Faulting and Seismic Hazards

Prompted by damaging earthquakes in California, State legislation and policies concerning the classification and land-use criteria associated with faults have been developed. Their purpose was to prevent the construction of urban developments across the trace of active faults, resulting in the Alquist-Priolo Earthquake Fault Zoning Act. Earthquake Fault Zones have been delineated along the traces of active faults within California. Where developments for human occupation are proposed within these zones, the State requires detailed fault evaluations be performed so that engineering geologists can mitigate the hazards associated with active faulting by identifying the location of active faults and allowing for a setback from zones of previous ground rupture.

The subject site is not located within an Alquist-Priolo Earthquake Fault Zone and no faults were identified on the site during our site evaluation. The possibility of damage due to ground rupture is considered low since no active faults are known to cross the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching, shallow ground rupture, soil liquefaction and dynamic settlement. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. Some of the major active nearby faults that could produce these secondary effects include the San Joaquin Hills, Whittier, Elsinore, Newport-Inglewood, among others (CGS, 2018). A discussion of these secondary effects is provided in the following sections.

2.4.1 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that loose, saturated, near-surface, cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils, and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction. Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Furthermore, dynamic settlement of dry sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

Based on our review of the State of California Seismic Hazard Zone for liquefaction potential (CDMG, 2001), the subject site is not located within a liquefaction hazard zone. Based on our evaluation, site soils are generally not susceptible to liquefaction due to the fine-grained nature of the on-site soils and low probability of groundwater in the upper 50 feet. Therefore, liquefaction potential is considered low.

2.4.2 Lateral Spreading

Lateral spreading is a type of liquefaction induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move downslope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

Due to the site being relatively flat, low liquefaction potential and the lack of an adjacent “free face” to drive lateral spreading, the potential for lateral spreading is considered very low.

2.5 Seismic Design Criteria

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2022 California Building Code (CBC) and applicable portions of ASCE 7-16 which has been adopted by the CBC. Please note that the following seismic parameters are only applicable for code-based acceleration response spectra and are not applicable for where site-specific ground motion procedures are required by ASCE 7-16. Representative site coordinates of latitude 33.700290 degrees north and longitude -117.768356 degrees west were utilized in our analyses. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 2 on the following page. Since site soils are Site Class D, additional adjustments are required to code acceleration response spectrums as outlined below and provided in ASCE 7-16. The structural designer should contact the geotechnical consultant if structural conditions (e.g., number of stories, seismically isolated structures, etc.) require site-specific ground motions.

TABLE 2
Seismic Design Parameters

Selected Parameters from 2022 CBC, Section 1613 - Earthquake Loads	Seismic Design Values	Notes/Exceptions
Distance to applicable faults classifies the site as a “Near-Fault” site.		Section 11.4.1 of ASCE 7
Site Class	D*	Chapter 20 of ASCE 7
S _s (Risk-Targeted Spectral Acceleration for Short Periods)	1.258g	From SEAOC, 2024
S ₁ (Risk-Targeted Spectral Accelerations for 1-Second Periods)	0.450g	From SEAOC, 2024
F _a (per Table 1613.2.3(1))	1.0	For Simplified Design Procedure of Section 12.14 of ASCE 7, F _a shall be taken as 1.4 (Section 12.14.8.1)
F _v (per Table 1613.2.3(2))	1.850	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S _{MS} for Site Class D [Note: S _{MS} = F _a S _s]	1.258g	-
S _{M1} for Site Class D [Note: S _{M1} = F _v S ₁]	0.833g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S _{DS} for Site Class D [Note: S _{DS} = (2/3)S _{MS}]	0.839g	-
S _{D1} for Site Class D [Note: S _{D1} = (2/3)S _{M1}]	0.555g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
C _{RS} (Mapped Risk Coefficient at 0.2 sec)	0.940	ASCE 7 Chapter 22
C _{R1} (Mapped Risk Coefficient at 1 sec)	0.932	ASCE 7 Chapter 22
*Since site soils are Site Class D and S ₁ is greater than or equal to 0.2, the seismic response coefficient C _s is determined by Eq. 12.8-2 for values of T ≤ 1.5T _s and taken equal to 1.5 times the value calculated in accordance with either Eq. 12.8-3 for T _L ≥ T > T _s , or Eq. 12.8-4 for T > T _L . Refer to ASCE 7-16. Site Class F modified to Site Class D, seismic parameters only applicable for structure period ≤ 0.5 second, refer to discussion above.		

A deaggregation of the PGA based on a 2,475-year average return period (MCE) indicates that an earthquake magnitude of 6.55 at a distance of approximately 14.75 km from the site would contribute the most to this ground motion. A deaggregation of the PGA based on a 475-year average return period (Design Earthquake) indicates that an earthquake magnitude of 6.56 at a distance of approximately 21.37 km from the site would contribute the most to this ground motion (USGS, 2014).

Section 1803.5.12 of the 2022 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.576g (SEAOC, 2024). The design PGA is equal to 0.384g (2/3 of PGA_M).

2.6 Oversized Material

Oversized materials (material larger than 8 inches in maximum dimension) are not anticipated to be encountered during site grading based on our subsurface evaluation. If encountered, recommendations are provided for appropriate handling of oversized materials in Appendix E.

2.7 Expansion Potential

Based on the results of laboratory testing from our evaluation and from nearby sites, finished grade soils are anticipated to have a “High to Very High” expansion potential. Final expansion potential of site soils should be determined at the completion of grading.

2.8 Soils Susceptible to Hydro-Collapse

Soils that are typically susceptible to hydro-collapse (or collapsible soils) are predominately sand and silt held in a loose honeycomb structure. This relatively loose honeycomb structure is held together by small amounts clay or calcium carbonate acting as a temporary (soluble) cementing agent. If the soil remains dry the soil maintains its structure, however the addition of water to the soil will greatly weaken the honeycomb structure and the soil can subsequently experience immediate collapses. This collapse results in rapid soil settlement and potential damage to any improvements which are located without the zone of influence of the collapsible soils.

Laboratory testing for hydro-collapse is typically performed per American Society for Testing and Materials (ASTM) Test Method D5333 or ASTM D 2435. The two most common categorizations of hydro-collapse potential are ASTM D5333 and the Naval Facilities Engineering Command (NFEC, 1986) are shown in Table 3A and 3B below. As indicated in Table 3B soils with collapse potential above 5 percent are considered “trouble”.

TABLE 3A

Classification of Soil Collapsibility per ASTM D 5333

Collapse Index (I_e)	Collapse (%)	Collapse Potential
0	0	None
0.001 - 0.02	0.1 - 2	Slight
0.021 - 0.60	2.1 - 6	Moderate
0.60 - 0.10	6 - 10	Moderately Severe
> 0.10	> 10	Severe

TABLE 3B

Classification of Soil Collapsibility per NFEC, 1986

Collapse Potential (%)	Severity of Problem
0-1	No Problem
1-5	Moderate Trouble
5-10	Trouble
10-20	Severe Trouble
20	Very Severe Trouble

A summary of the onsite soils collapse potential are provided in Table 4 on the following page. The measured collapse potential is up to 7.5 percent, with three samples indicating collapse potential of 5 percent or greater.

TABLE 4

Summary of Hydro-Collapse Laboratory Test Results

Boring	Laboratory Measured Collapse (%)
HS-2 @ 10 feet	7.5
HS-2 @ 15 feet	1.7
HS-3 @ 10 feet	6.2
HS-5 @ 10 feet	5.1

3.0 CONCLUSIONS

Based on the results of our subsurface geotechnical evaluation, it is our opinion that the proposed improvements are feasible from a geotechnical standpoint, provided that the recommendations contained in the following sections are incorporated during site development. A summary of our geotechnical conclusions are as follows:

- In general, borings excavated at the subject site indicate primarily native soils consisting of clayey sand, silty sand and sandy clay to the maximum explored depth of approximately 70 feet below existing grade. Native alluvial materials were found locally overlain by a relatively thin veneer of old artificial fill associated with previous development of the site. The near-surface loose and compressible soils are not suitable for the planned improvements in their present condition (refer to Section 4.1).
- Groundwater was encountered at a depth of approximately 54 feet below existing grade. Historic high groundwater is estimated to be greater than 40 feet below existing ground surface (CGS, 2001).
- The subject study area is not located within a mapped State of California Earthquake Fault Zone, and based upon our review of published geologic mapping, no known active or potentially active faults are known to exist within or in the immediate vicinity of the site. Therefore, the potential for ground rupture as a result of faulting is considered very low.
- The main seismic hazard that may affect the site is ground shaking from one of the active regional faults. The subject site will likely experience strong seismic ground shaking during its design life.
- The site is not located in a mapped liquefaction hazard zone. Based on our evaluation, site soils are generally not susceptible to liquefaction due to the fine-grained nature of the on-site soils and low probability of groundwater in the upper 50 feet. Therefore, liquefaction potential is considered low.
- Based on the results of preliminary laboratory testing, site soils are anticipated to have “High to Very High” expansion potential. Final design expansion potential must be determined at the completion of grading.
- Excavations into the existing site soils should be feasible with heavy construction equipment in good working order. We anticipate that soils generated from the excavations will be generally suitable for re-use as compacted fill, provided they are relatively free of rocks larger than 8 inches in dimension, construction debris, and significant organic material.
- Oversized materials (greater than 8 inches in maximum dimension) are not likely to be encountered during site grading. If encountered, recommendations are provided for appropriate handling of oversized materials in Appendix E.
- Due to their high clay content and expansion potential, the onsite soils are not suitable for backfill of site retaining/basement walls. Therefore, import of sandy soils meeting project recommendations will be required.
- Field testing resulted in a measured infiltration rate ranging from 0.01 to 0.02 inches per hour. The measured infiltration rates do not include a factor of safety. Discussion regarding infiltration is provided in Section 4.8.
- Some of the site soils are susceptible to hydro-collapse. To mitigate this condition, the soils most susceptible to collapse should be temporarily removed and recompacted as fill during the grading operations.

- Pre-soaking of the subgrade for building slabs (and flatwork) will be required due to site expansive soils. The duration and process varies greatly based on the chosen method and is also dependent on factors such as soil type and weather conditions. Time duration for presoaking from completion of rough grading to trenching of foundations should be accounted for in the construction schedule (typically 2 to 3 weeks).

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of grading and earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the owner.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2022 CBC requirements. With regard to the possible occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an “acceptable level.” The “acceptable level” of risk is defined by the California Code of Regulations as “that level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project” [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions but cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual as-graded conditions.

4.1 Site Earthwork

Rough grading shall include remedial earthwork grading and placement of engineered compacted fill to design grades. Geotechnical recommendations for precise grading and construction of the proposed new improvements will be provided, as necessary.

We recommend that earthwork onsite be performed in accordance with the following recommendations, future grading plan review report(s), the 2022 CBC/City of Irvine requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix E. In case of conflict, the following recommendations shall supersede those included in Appendix E. The following recommendations may be revised within future grading plan review reports or based on the actual conditions encountered during site grading.

4.1.1 Site Preparation

Prior to grading, areas to be developed should undergo complete demolition, removal of all vegetation, and clearing of pavements, existing utilities, foundation and slab elements from the site. Vegetation, debris from previous land use and excessive organic material

should be removed and properly disposed of offsite. Holes resulting from removals of buried obstructions, which extend below proposed remedial and/or finish grades, should be replaced with suitable compacted fill material. If the demolition contractor removes subsurface utilities below the proposed remedial grading depth we recommend the excavations either be left open until grading operations begin or properly compacted to the depth of remedial grading.

If cesspools or septic systems are encountered, they should be removed in their entirety. The resulting excavation should be backfilled with properly compacted fill soils. As an alternative, cesspools can be backfilled with lean sand-cement slurry. Any encountered wells should be properly abandoned in accordance with regulatory requirements.

4.1.2 Removal Depths and Limits

In order to provide a relatively uniform bearing condition for the planned improvements, we recommend the near-surface potentially compressible soils and soils highly susceptible to collapse be temporarily removed and recompacted as engineered fill. If any undocumented artificial fill is encountered within the influence of the proposed building pads, the soils should be removed to competent native materials.

In order to promote more uniform soil conditions, soils shall be temporarily removed and recompacted to a minimum depth of approximately 12 feet below existing grade or 3 feet below the bottom of proposed foundations, whichever is deeper. Additionally, existing undocumented fill and unsuitable topsoil encountered within the building footprints should be temporarily removed and recompacted as compacted fill. Where space is available, the envelope for removal and recompaction should extend laterally a minimum distance equal to the depth of removal and recompaction below finish grade or 5 feet beyond the edges of the proposed building improvements, whichever is larger.

Local conditions may be encountered during excavation that could require additional over-excavation beyond the above noted minimum in order to obtain an acceptable subgrade. The actual depths and lateral extents of grading will be determined by the geotechnical consultant, based on subsurface conditions encountered during grading. Removal areas and areas to be over-excavated should be accurately staked in the field by the Project Surveyor.

4.1.3 Temporary Excavations

Temporary excavations should be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations should be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. Based on our field investigation, the majority of site soils are anticipated to be OSHA Type "B" soils (refer to the attached boring logs). Isolated lenses of sandy soils are present and should be considered susceptible to caving. Soil conditions should be regularly evaluated during construction to verify conditions are as anticipated. The contractor shall be responsible

for providing the “competent person” required by OSHA standards to evaluate soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor.

Where proposed improvements will be adjacent to property lines, the potential for impacting existing offsite improvements may be reduced by performing “ABC” slot cuts while performing earthwork removal and recompaction. “ABC” slot cuts are defined as excavations perpendicular to sensitive property boundaries that are divided into multiple “slots” of equal width. If slots are labeled A, B, C, A, B, C, etc., then all “A” slots can be excavated at the same time but must be backfilled before all “B” slots can be excavated, etc. Any given slot should be backfilled immediately with properly compacted fill to finish grade prior to excavation of the adjacent two slots. Please note some isolated sand lenses which are potentially susceptible to caving are present at the site. Recommendations for slot cut dimensions should be evaluated during grading. Protection of the existing offsite improvements during grading is the responsibility of the contractor.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter of excavations a minimum distance equivalent to a 1:1(horizontal to vertical) projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

It should be noted that any excavation that extends below a 1:1 (horizontal to vertical) projection of an existing foundation will remove existing support of the structure foundation. If requested, temporary shoring parameters will be provided.

4.1.4 Removal Bottoms and Subgrade Preparation

In general, removal bottoms, over-excavation bottoms and areas to receive compacted fill should be scarified to a minimum depth of 6 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content), and re-compacted per project recommendations.

Removal bottoms, over-excavation bottoms and areas to receive fill should be observed and accepted by the geotechnical consultant prior to subsequent fill placement.

4.1.5 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill, provided they are screened of significant organic materials, construction debris and any oversized material (8 inches in greatest dimension).

From a geotechnical viewpoint, import soils for general fill (i.e., non-retaining/basement wall backfill) should consist of clean, granular soils of Medium expansion potential (expansion index 90 or less based on ASTM D4829). Import for retaining/basement wall backfill should meet the criteria outlined in the paragraph below. Source samples should be provided to the geotechnical consultant for laboratory testing a minimum of three working days prior to any planned importation.

Retaining/basement wall backfill should consist of imported sandy soils with a maximum of 35 percent fines (passing the No. 200 sieve) per ASTM Test Method D1140 (or ASTM D6913/D422) and a "Very Low" expansion potential (EI of 20 or less per ASTM D4829). Soils should also be screened of organic materials, construction debris, and any material greater than 3 inches in maximum dimension.

Aggregate base should conform to the requirements of Section 200-2 of the most recent version of the Standard Specifications for Public Works Construction ("Greenbook") for untreated base materials and/or City of Irvine requirements.

The placement of demolition materials in compacted fill is acceptable from a geotechnical viewpoint provided the demolition material is broken up into pieces not larger than typically used for aggregate base (approximately 2 to 4 inches in maximum dimension) and well blended into fill soils with essentially not resulting voids. Demolition material placed in fills must be free of construction debris (wood, organics, etc.) and reinforcing steel. If you elect to incorporate asphalt concrete fragments into the fill materials, approval from an environmental viewpoint and/or local agency may be required and is not the purview of the geotechnical consultant. From our previous experience, we recommend that asphalt concrete fragments be exported or limited to fill areas within planned street or parking areas (i.e., not within building pad areas).

4.1.6 Placement and Compaction of Fills

Material to be placed as fill should be brought to near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content) and recompacted to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils will be required in order to achieve adequate compaction. Drying and/or mixing the very moist soils will be required prior to reusing the materials in compacted fills. Soils are also present that will require additional moisture in order to achieve the required compaction.

The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances and with observation and testing by LGC Geotechnical. Oversized material as previously defined should be removed from site fills.

During backfill of excavations, the fill should be properly benched into firm and

competent soils of temporary backcut slopes as it is placed in lifts.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction per ASTM D1557 at near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content).

4.1.7 Trench and Retaining/Basement Wall Backfill and Compaction

The onsite materials may generally be suitable as trench backfill provided the soils are screened of organic matter and rocks greater than 6 inches in diameter. Trench backfill should be compacted in uniform lifts (generally not exceeding 12 inches in compacted thickness) by mechanical means to at least 90 percent relative compaction (per ASTM Test Method D1557). A representative from LGC Geotechnical should observe and test the backfill to verify compliance with the project recommendations.

Some manufacturers have restrictions for the type of soil in contact with pipes. Manufacturer specifications for soils surrounding the pipe should be reviewed and approved by the pipe designer for use prior to construction. The use of open-graded rock as backfill must include means of reducing migration of fines of adjacent materials into the void spaces. This can be done by entirely wrapping the open-graded rock in a filter fabric or introducing an excavatable flowable fill to the rock.

Compactive efforts must be made for all backfill soil types except for flowable fill. There must be room between the trench side walls and the springline of the pipe for mechanical compaction equipment to get adequate compaction of the soil under the haunches of the pipe. If mechanical compaction may result in damage to pipes, clean sand having a Sand Equivalent (SE) greater than or equal to 20 (per California Test Method [CTM] 217) can be used to shade the pipes. Sand backfill should be densified by jetting or flooding and then tamped to ensure adequate compaction. Sand grains should be from a natural source with rounded shape. Manufactured sand from crushed rock or recycled material is not suitable for jetting/flooding as the grains are typically angular in shape and do not densify well enough with these methods.

Retaining/basement wall backfill should consist of approved imported sandy soils as outlined in preceding Section 4.1.5. The onsite soils are not suitable for backfill of site retaining/basement walls based on their fines content and expansion potential. Therefore, import of sandy soils meeting project recommendations will be required. For the lateral limits of select sandy backfill refer to Figures 3 and 4. Retaining/basement wall backfill soils should be compacted in relatively uniform thin lifts to at least 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining/basement wall backfill materials should not be permitted.

A representative from LGC Geotechnical should observe, probe, and test the backfill to verify compliance with the project recommendations.

4.1.8 Shrinkage and Subsidence

Allowance in the earthwork volumes budget should be made for an estimated 5 to 15 percent reduction in volume of near-surface (upper approximate 12 feet) soils. It should be stressed that these values are only estimates and that an actual shrinkage factor would be extremely difficult to predetermine. The effective change in volume of onsite soils will depend primarily on the type of compaction equipment, method of compaction used onsite by the contractor, and accuracy of the topographic survey.

Due to the combined variability in topographic surveys, inability to precisely model the removals and variability of on-site near-surface conditions, it is our opinion that the site will not balance at the end of grading. If importing/exporting a large volume of soils is not considered feasible or economical, we recommend a balance area be designated onsite that can fluctuate up or down based on the actual volume of soil. We recommend a "balance" area that can accommodate on the order of 5 percent (plus or minus) of the total grading volume be considered.

4.2 Preliminary Foundation Recommendations

Provided that the remedial grading recommendations provided herein are implemented, the site may be considered suitable for the support of the proposed structures using either a post-tensioned foundation or alternative rigid foundation system designed to resist the impacts of expansive soils. Site soils are anticipated to be of High to Very High expansion potential (EI of greater than 90 per ASTM D4829). This must be verified based on as-graded conditions. Please note that the following foundation recommendations are preliminary and must be confirmed by LGC Geotechnical at the completion of project plans (i.e., foundation, grading and site layout plans) as well as completion of earthwork. Recommended soil bearing and estimated static settlement are provided in Section 4.3.

4.2.1 Provisional Post-Tensioned Foundation Design Parameters

The geotechnical parameters provided herein may be used for post-tensioned slab foundations with a deepened perimeter footing or a post-tensioned mat slab. These parameters have been determined in general accordance with the Post-Tensioning Institute (PTI) Standard Requirements for Design of Shallow Post-Tensioned Concrete Foundations on Expansive Soils, referenced in Chapter 18 of the 2022 CBC. In utilizing these parameters, the foundation engineer should design the foundation system in accordance with the allowable deflection criteria of applicable codes and the requirements of the structural designer/architect. Other types of stiff slabs may be used in place of the CBC post-tensioned slab design provided that, in the opinion of the foundation structural designer, the alternative type of slab is at least as stiff and strong as that designed by the CBC/PTI method.

Our design parameters are based on our experience with similar projects, test results onsite, and the anticipated nature of the soil (with respect to expansion potential).

Please note that implementation of our recommendations will not eliminate foundation movement (and related distress) should the moisture content of the subgrade soils fluctuate. It is the intent of these recommendations to help maintain the integrity of the proposed structures and reduce (not eliminate) movement, based upon the anticipated site soil conditions. Should future owners and/or property maintenance personnel not properly maintain the areas surrounding the foundation, for example by overwatering, then we anticipate for highly expansive soils the maximum differential movement of the perimeter of the foundation to the center of the foundation to be on the order of a couple of inches. Soils of lower expansion potential are anticipated to show less movement.

TABLE 5

Preliminary Post-Tensioned Foundation Design Parameters

Parameter	PT Slab with Perimeter Footing	PT Mat with Thicken ed Edge
Expansion Potential	Very High	Very High
Thornthwaite Moisture Index	-20	-20
Constant Soil Suction	PF 3.9	PF 3.9
Center Lift Edge moisture variation distance, e_m Center lift, y_m	6.1 feet 1.0 inch	6.1 feet 1.2 inch
Edge Lift Edge moisture variation distance, e_m Edge lift, y_m	3.4 feet 2.5 inches	3.4 feet 2.5 inches
Modulus of Subgrade Reaction, k (assuming presoaking as indicated below)	100 pci	100 pci
Minimum perimeter footing/thickened edge embedment below finish grade	30 inches	6 inches
Minimum Slab Thickness	6 inches ²	10 inches ²
Presoak	140% of Opt. 30 inches	140% of Opt. 30 inches
1. Expansion index is for preliminary design purposes. Further evaluation is needed at the completion of grading. 2. Recommendations for foundation reinforcement and slab thickness are ultimately the purview of the foundation engineer/structural engineer based upon geotechnical criteria and structural engineering considerations. 3. Recommendations for vapor retarders below slabs are also the purview of the foundation engineer/structural engineer and should be provided in accordance with applicable code requirements.		

4.2.2 Provisional Conventional Foundation Design Parameters

Conventional foundations may be designed in accordance with the Wire Reinforcement Institute (WRI) procedure for slab-on-ground foundations per Section 1808 of the 2022 CBC to resist expansive soils. The following preliminary soil parameters may be used:

- Effective Plasticity Index: 45
- Climatic Rating: $C_w = 15$
- Reinforcement: Per structural designer
- Minimum Footing Depth: 30 inches below lowest adjacent grade.
- Moisture-condition (presoak) slab subgrade to 140% of optimum moisture content to a minimum depth of 30 inches prior to trenching.

The recommended moisture content should be maintained up to the time of concrete placement.

4.2.3 Shallow Foundation Maintenance

The geotechnical parameters provided herein assume that if the areas adjacent to the foundation are planted and irrigated, these areas will be designed with proper drainage and adequately maintained so that ponding, which causes significant moisture changes below the foundation, does not occur. Our recommendations do not account for excessive irrigation and/or incorrect landscape design. Plants should only be provided with sufficient irrigation for life and not overwatered to saturate subgrade soils. Sunken planters placed adjacent to the foundation should either be designed with an efficient drainage system or liners to prevent moisture infiltration below the foundation or into the basement. Some lifting of the perimeter foundation beam should be expected even with properly constructed planters.

In addition to the factors mentioned above, future owners/property management personnel should be made aware of the potential negative influences of trees and/or other large vegetation. Roots that extend near the vicinity of foundations can cause distress to foundations. Future owners (and the owner's landscape architect) should not plant trees/large shrubs closer to the foundations than a distance equal to half the mature height of the tree or 20 feet, whichever is more conservative unless specifically provided with root barriers to prevent root growth below the building foundation.

It is the owner's responsibility to perform periodic maintenance during hot and dry periods to ensure that adequate watering has been provided to keep soil from separating or pulling back from the foundation. Future owners and property management personnel should be informed and educated regarding the importance of maintaining a constant level of soil-moisture. The owners should be made aware of the potential negative consequences of both excessive watering, as well as allowing potentially expansive soils to become too dry. Expansive soils can undergo shrinkage during drying, and swelling during the rainy winter season, or when irrigation is resumed. This can result in distress to building structures and hardscape improvements. The builder should provide these recommendations to future owners

and property management personnel.

4.2.4 Slab Underlayment Guidelines

The following is for informational purposes only since slab underlayment (e.g., moisture retarder, sand or gravel layers for concrete curing and/or capillary break) is unrelated to the geotechnical performance of the foundation and thereby not the purview of the geotechnical consultant. Post-construction moisture migration should be expected below the foundation. The foundation engineer/architect should determine whether the use of a capillary break (sand or gravel layer), in conjunction with the vapor retarder, is necessary or required by code. Sand layer thickness and location (above and/or below vapor retarder) should also be determined by the foundation engineer/architect.

4.3 Soil Bearing and Lateral Resistance

Subterranean Basement at least 9 feet below Grade: Provided our earthwork recommendations are implemented, an allowable soil bearing pressure of 3,000 pounds per square foot (psf) may be used for the design of footings having a minimum width of 18 inches and minimum embedment of 18 inches below the lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment and 150 psf for each additional foot of foundation width to a maximum of 4,000 psf.

At-Grade Structures: Provided our earthwork recommendations are implemented, an allowable soil bearing pressure of 1,500 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and minimum embedment of 12 inches below lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment and 150 psf for each additional foot of foundation width to a maximum value of 2,500 psf.

A mat foundation a minimum of 6 inches below lowest adjacent grade may be designed for an allowable soil bearing pressure of 1,200 psf. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by $\frac{1}{3}$ for short duration loading (i.e., wind or seismic loads).

In utilizing the above-mentioned allowable bearing capacity and provided our earthwork recommendations are implemented, foundation settlement due to structural loads is anticipated to be 1-inch or less. Differential settlement may be taken as half of the total settlement (i.e., $\frac{1}{2}$ -inch over a horizontal span of 40 feet).

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.25 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 200 psf per foot of depth (or pcf) to a maximum of 2,000 psf may be used for the sides of footings poured against properly compacted fill. Allowable passive pressure may be increased to 265 pcf (maximum of 2,650 psf) for short duration seismic loading. This passive pressure is applicable

for level (ground slope equal to or flatter than 5H:1V) conditions only. Frictional resistance and passive pressure may be used in combination without reduction. We recommend that the upper foot of passive resistance be neglected if finished grade will not be covered with concrete or asphalt. The provided allowable passive pressures are based on a factor of safety of 1.5 and 1.1 for static and seismic loading conditions, respectively. The structural designer should incorporate appropriate factors of safety and/or load factors in their design.

4.4 Lateral Earth Pressures and Retaining/Basement Wall Design Considerations

The following may be used for design of site retaining/basement walls. It is our understanding that basement walls up to approximately 9 feet are proposed beneath the church building. Lateral earth pressures are provided as equivalent fluid unit weights, in psf per foot of depth (or pcf). These values do not contain an appreciable factor of safety, so the retaining/basement wall designer should apply the applicable factors of safety and/or load factors during design. A soil unit weight of 120 pcf may be assumed for calculating the actual weight of soil over the wall footing.

The following lateral earth pressures are presented in Table 6 below, for approved imported free draining, clean granular (sandy) soils with a maximum of 35 percent fines (passing the No. 200 sieve per ASTM D-421/422) and a “Very Low” expansion potential (EI of 20 or less per ASTM D4829). The site soils are not suitable for retaining/basement wall backfill due to their fines content and expansion index. Import of soils meeting the criteria outlined above will need to be used for retaining/basement wall backfill soil. The wall designer should clearly indicate on the retaining/basement wall plans the required imported sandy soil backfill criteria. These preliminary findings should be confirmed during grading.

TABLE 6

Lateral Earth Pressures – Approved Imported Sandy Soils

Conditions	Equivalent Fluid Unit Weight (pcf)	Equivalent Fluid Unit Weight (pcf)
	Level Backfill	2:1 Sloped Backfill
	Approved Sandy Soils	Approved Sandy Soils
Active	35	55
At-Rest	55	70

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for “active” pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include basement walls and 90-degree corners of retaining walls. Such walls should be designed for “at-rest.” The equivalent fluid pressure values assume free-draining conditions and a drainage system will be installed and maintained to prevent the build-up of hydrostatic pressures. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the

geotechnical engineer.

Retaining/basement wall structures should be provided with appropriate drainage and appropriately waterproofed. To reduce, but not eliminate, subsurface water issues for soils in front of the retaining or potential water intrusion into the basement, the perforated subdrain pipe should be located as low as possible behind the retaining/basement wall. The outlet pipe should be sloped to drain to a suitable outlet. In general, we do not recommend retaining/basement wall outlet pipes be connected to area drains. If subdrains are connected to area drains, special care should be taken to maintain these drains. Typical conventional retaining/basement wall drainage is shown on Figures 3 and 4, respectively. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Waterproofing and subdrain outlet systems are not the purview of the geotechnical consultant.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining/basement wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward projection from the bottom of the proposed retaining/basement wall footing will surcharge the proposed retaining/basement wall. In addition to the recommended earth pressure, retaining/basement walls adjacent to streets should be designed to resist a uniform lateral pressure of 85 pounds per square foot (psf) due to normal street vehicle traffic, if applicable. Uniform lateral surcharges may be estimated using the applicable coefficient of lateral earth pressure using a rectangular distribution. A factor of 0.45 and 0.3 may be used for at-rest and active conditions, respectively. The retaining/basement wall designer should contact the geotechnical consultant for any required geotechnical input in estimating surcharge loads.

The retaining wall/basement wall designer may use a seismic lateral earth pressure increment of 10 pcf. This increment should be applied in addition to the provide static lateral earth pressure using a triangular distribution with the resultant acting at $H/3$ in relation to the base of the retaining structure (where H is the retained height). Per Section 1803.5.12 of the 2022 CBC, the seismic lateral earth pressure is applicable to structures assigned to Seismic Design Category D through F for retaining wall structures supporting more than 6 feet of backfill height. This seismic lateral earth pressure is estimated using the procedure outlined by the Structural Engineers Association of California and the Naval Civil Engineering Laboratory (Lew, et al, 2010 & NCEL, 1993).

Soil bearing and lateral resistance (friction coefficient and passive resistance) are provided in Section 4.3. Earthwork considerations (temporary backcuts, backfill, compaction, etc.) for retaining/basement walls are provided in Section 4.1 (Site Earthwork) and the subsequent earthwork related sub-sections.

4.5 Corrosivity to Concrete and Metal

Although not corrosion engineers (LGC Geotechnical is not a corrosion consultant), several governing agencies in Southern California require the geotechnical consultant to determine the corrosion potential of soils to buried concrete and metal facilities. We therefore present the results of our testing with regard to corrosion for the use of the client and other consultants, as they determine necessary.

Corrosion testing of near-surface bulk samples indicated a soluble sulfate content value of 95 ppm (less than 0.01 percent), a chloride content of 60 ppm, pH of 7.90, and a minimum resistivity of 720 ohm-centimeters. Based on Caltrans Corrosion Guidelines (2021), soils are considered corrosive if the pH is 5.5 or less, or the chloride concentration is 500 ppm or greater, or the sulfate concentration is 2,000 ppm (0.2 percent) or greater. Based on the test results, soils are not considered corrosive using Caltrans criteria. Note that based on minimum resistivity the soils are considered severely corrosive to metallic improvements. If improvements that may be susceptible to corrosion are proposed, it is recommended that further evaluation by a corrosion engineer be performed.

Based on our laboratory test results of representative site soil samples and our experience, onsite soils should be considered as having a severity categorization of “moderate” and are designated class “S1” per ACI 318, Table 19.3.1.1 with respect to sulfates. Concrete in direct contact with the onsite soils can be designed according to ACI 318, Table 19.3.2.1 using the “S1” sulfate classification.

Laboratory testing may need to be performed at the completion of grading by the project corrosion engineer to further evaluate the as-graded soil corrosivity characteristics. Accordingly, revision of the corrosion potential may be needed, should future test results differ substantially from the conditions reported herein. The client and/or other members of the development team should consider this during the design and planning phase of the project and formulate an appropriate course of action.

4.6 Preliminary Asphalt Concrete Pavement Sections

For the purposes of these preliminary recommendations, we have selected a preliminary design R-value of 5 and calculated pavement sections for Traffic Indices of 5.0, 5.5 and 6.0. R-value testing of the street subgrade will need to be performed to confirm our preliminary testing results/assumptions once the streets have been graded to finish subgrade elevations and the final Traffic Index is determined by the Civil Engineer or City Engineer. We are not responsible for selecting a design Traffic Index. It is our understanding that the City of Irvine requires a minimum pavement section of 4.2 inches of asphalt over 6 inches of base.

TABLE 7

Preliminary Pavement Sections

Assumed Traffic Index	5.0	5.5	6.0
R -Value Subgrade	5	5	5
AC Thickness	4.2	4.2 inches	4.2 inches
AB Thickness	8.0 inches	10.0 inches	12.5 inches

Due to anticipated construction traffic prior to the completion of the project, we recommend that the total thickness (base course and capping course) of AC be placed at essentially the

same time. Construction traffic loading on only the base course of the AC will increase the potential for pavement distress. It should be noted that construction traffic such as concrete trucks will likely exceed traffic loading after completion of construction.

Increasing the thickness of asphalt or adding additional base material will reduce the likelihood of the pavement experiencing distress during its service life. The above recommendations are based on the assumption that proper maintenance and irrigation of the areas adjacent to the roadway will occur through the design life of the pavement. Failure to maintain a proper maintenance and/or irrigation program may jeopardize the integrity of the pavement.

Earthwork recommendations regarding aggregate base and subgrade are provided in the previous Section "Site Earthwork" and the related sub-sections of this report.

4.7 Nonstructural Concrete Flatwork

Nonstructural concrete flatwork (such as walkways, private drives, patio slabs, etc.) has a potential for cracking due to changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete may be designed in accordance with the minimum guidelines outlined in Table 8 on the following page. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 8

Nonstructural Concrete Flatwork Guidelines

	Sidewalks (≤6 feet wide)	Patios/Entryways / Walkways (adjacent to Buildings or flatwork >6 feet wide)	City Sidewalk Curb and Gutters
Minimum Thickness (in.)	4 (nominal)	5 (full)	City/Agency Standard
Presaturation	140% of optimum m/c to 12 inches	140% of optimum m/c to 24 inches	City/Agency Standard
Reinforcement	—	No. 3 at 24 inches on centers	City/Agency Standard
Thickened Edge (in.)	—	—	City/Agency Standard
Crack Control Joints	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	City/Agency Standard
Maximum Joint Spacing	5 feet	6 feet	City/Agency Standard

4.8 Subsurface Water Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade into subsurface soils rather than collected in a conventional storm drain system. Typically, a combination of methods are implemented to reduce surface water runoff and increase infiltration including; permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.

It should be noted that collecting and concentrating surface water for the purpose of intentionally infiltrating below grade, conflicts with the geotechnical engineering objective of directing surface water away from slopes, structures and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water. In general, the vast majority of geotechnical distress issues are directly related to improper drainage. In general, distress in the form of movement of improvements could occur as a result of soil saturation and loss of soil support, expansion, internal soil erosion, collapse and/or settlement.

The results of our field infiltration testing indicate the observed 1-D infiltration rate for I-1 and I-2 (not including required factors of safety for design) was 0.01 to 0.02 inches per hour. The design infiltration rate is thereby equal to the Observed Infiltration Rate provided in Table 1 (inches per hour) divided by the design factor of safety. The design factor of safety must be a minimum of 2.0 but may be increased at the discretion of the design engineer (County of Orange, 2013). Per the County of Orange infiltration guidelines (2013), infiltration of stormwater is not required when the factored infiltration rate (measured infiltration rate with safety factors applied) is less than 0.3 inches per hour in the vicinity of the BMPs.

Based on the results of field infiltration testing indicating essentially zero infiltration and soils with high fines content (silts and clays), we strongly recommend against the intentional infiltration of stormwater into the subsurface soils.

4.9 Control of Surface Water and Drainage Control

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed structures be sloped away from the proposed structures and towards an approved drainage device or unobstructed swale. Where possible, we recommend concrete or asphalt be placed around the outer 5-10 feet of the buildings. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.10 Geotechnical Plan Review

Project plans (grading, foundation, retaining/basement wall, etc.) should be reviewed by this office prior to construction to verify that our geotechnical recommendations have been incorporated. Additional or modified geotechnical recommendations may be required based on the proposed layout.

4.11 Geotechnical Observation and Testing

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC Geotechnical. Geotechnical observation and testing is required per Section 1705 of the 2022 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the

following stages:

- During grading (removal bottoms, fill placement, etc.);
- During retaining/basement wall backfill and compaction;
- During utility trench backfill and compaction;
- After presoaking building pad and other concrete-flatwork subgrades, and prior to placement of aggregate base or concrete;
- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placement of steel reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

5.0 LIMITATIONS

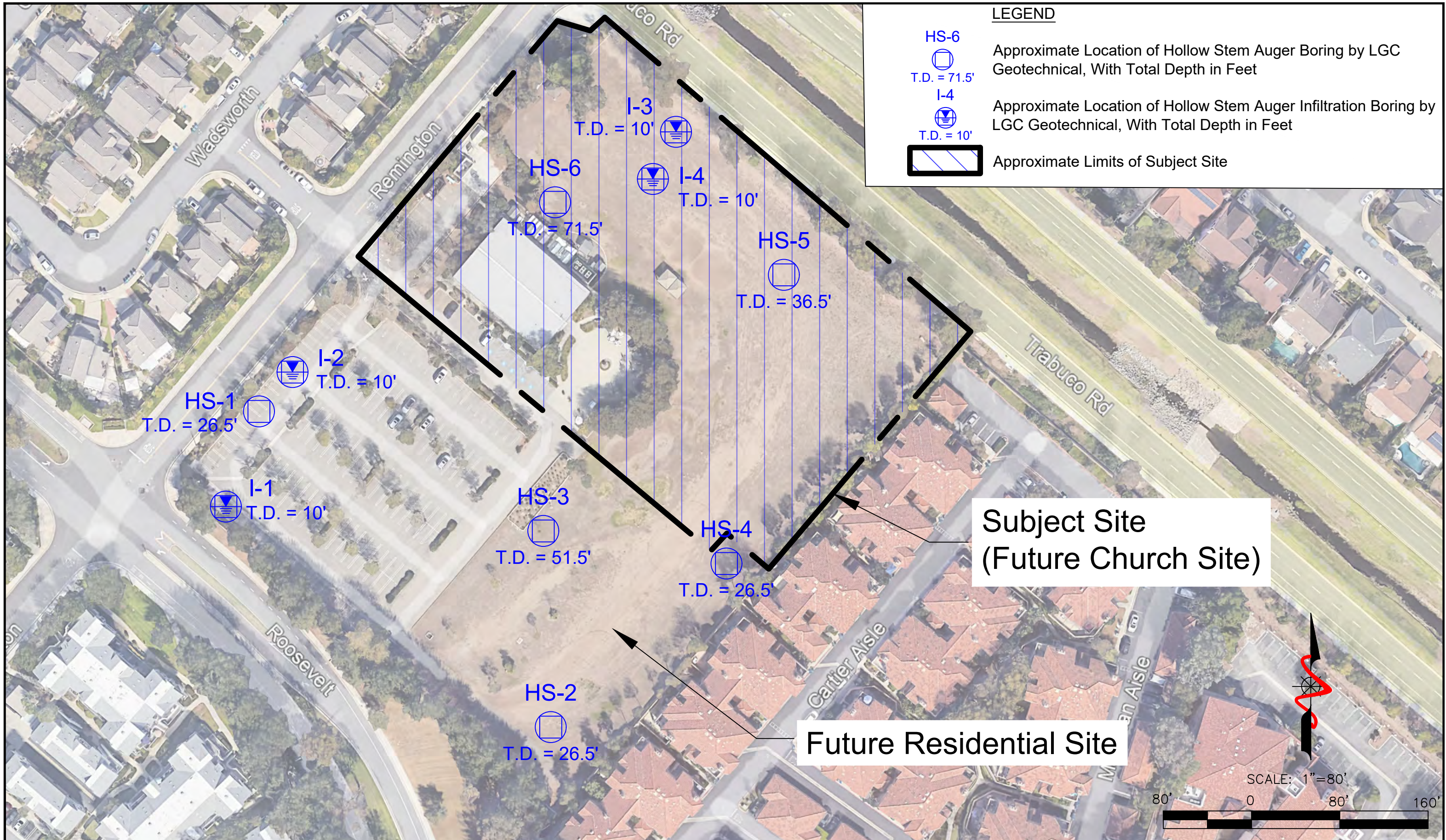
Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

This report is based on data obtained from limited observations of the site, which have been extrapolated to characterize the site. While the scope of services performed is considered suitable to adequately characterize the site geotechnical conditions relative to the proposed development, no practical evaluation can completely eliminate uncertainty regarding the anticipated geotechnical conditions in connection with a subject site. Variations may exist and conditions not observed or described in this report may be encountered during grading and construction.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the other consultants (at a minimum the civil engineer, structural engineer, landscape architect) and incorporated into their plans. The contractor should properly implement the recommendations during construction and notify the owner if they consider any of the recommendations presented herein to be unsafe, or unsuitable.

The findings of this report are valid as of the present date. However, changes in the conditions of a site can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. The findings, conclusions, and recommendations presented in this report can be relied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site. This report is intended exclusively for use by the client, any use of or reliance on this report by a third party shall be at such party's sole risk.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification.



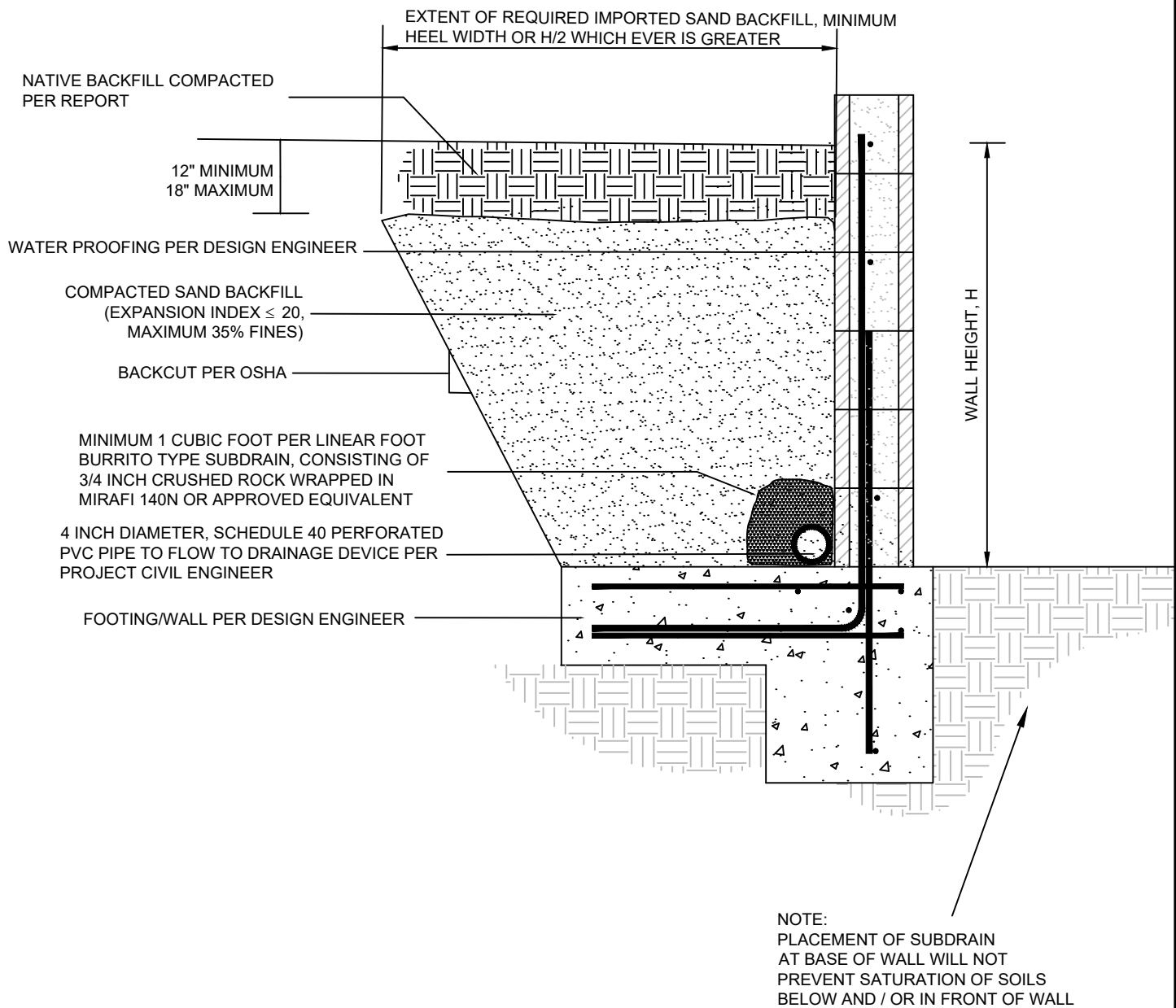
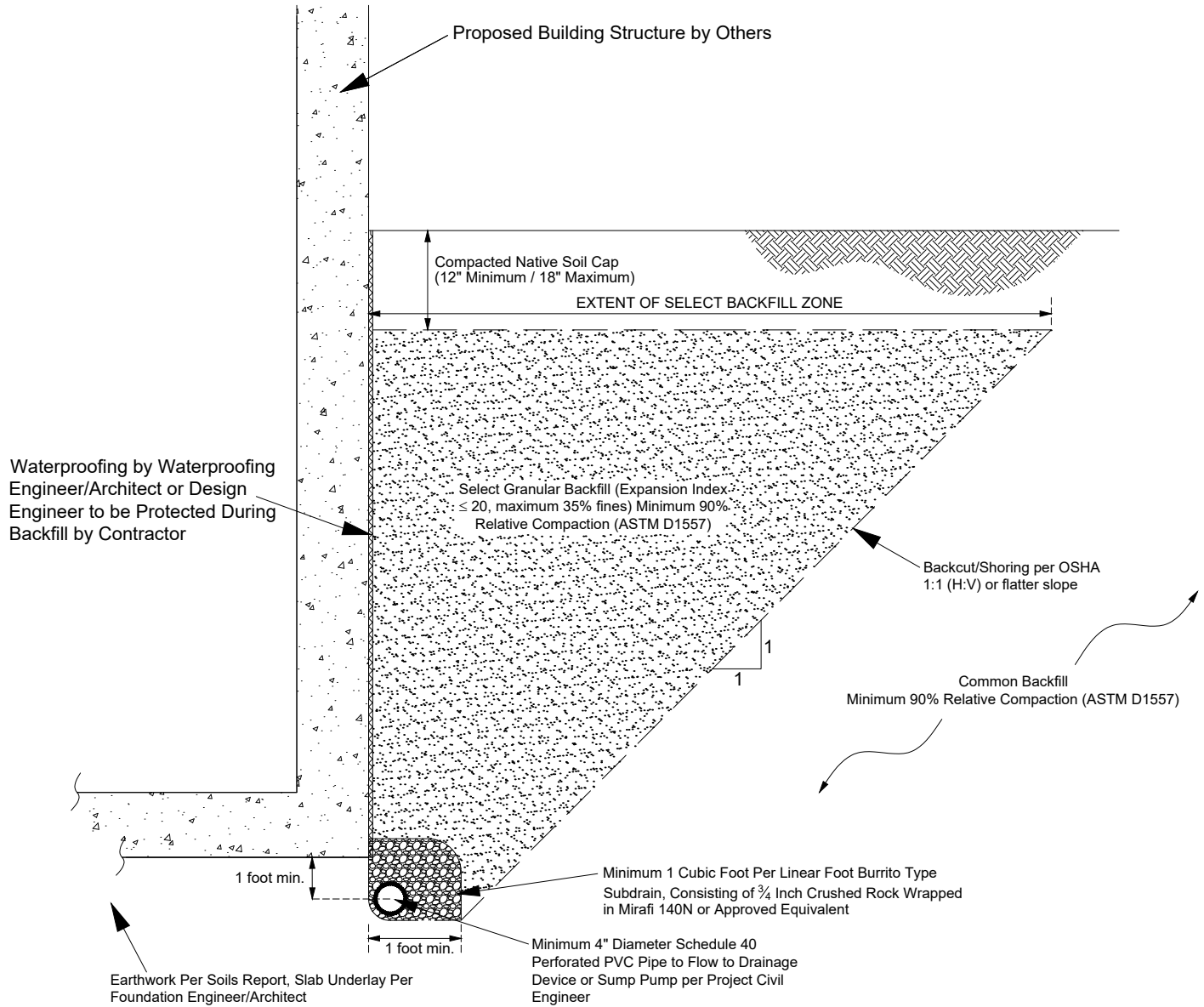


FIGURE 3
Retaining Wall
Backfill Detail

PROJECT NAME	Our Lady of Peace, Irvine
PROJECT NO.	23174-01
ENG. / GEOL.	DJB
SCALE	Not to Scale
DATE	July 2024



NOTE : Granular backfill may be substituted with 3/4 inch crushed rock wrapped in filter fabric. Crushed rock must be compacted in lifts. Geotechnical drainage detail will not prevent water seepage into structure, it is only to prevent build up of water pressure against wall.



FIGURE 4
Basement Subterranean
Structure Backfill/Subdrain
Detail

PROJECT NAME	Our Lady of Peace, Irvine
PROJECT NO.	23174-01
ENG. / GEOL.	DJB / BPG
SCALE	Not to Scale
DATE	July 2024

Appendix A

References

APPENDIX A

References

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Appendix B

Boring Logs

Geotechnical Boring Log Borehole HS-5

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 6"
Elevation of Top of Hole: 161' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
160	0							@0' - Grass	
								Young Axial Channel Deposits (Qya):	
			R-1	4 13 31	100.4	20.9	CL	@ 2.5' - Sandy CLAY: dark brown, very moist, hard, traces of roots	
155	5		R-2	11 11 11	79.5	9.3	SM	@ 5' - Silty SAND: pale brown, moist, medium dense	
			R-3	13 21 24	118.6	9.8	SC	@ 7.5' - Clayey SAND: brown, moist, dense	
150	10		R-4	13 12 10	81.6	9.8	CL-ML	@ 10' - Silty CLAY: olive brown, slightly moist, very stiff	CO
145	15		SPT-1	4 4 4		7.9	SM	@ 15' - Silty SAND: brown, moist, medium dense	
140	20		R-5	8 17 18	120.1	11.8	SC	@ 20' - Clayey SAND: dark brown, moist, medium dense	
135	25		SPT-2	3 5 7		28.0	CL	@ 25' - Sandy CLAY: dark brown, very moist, very stiff	
	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-5

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 6"
Elevation of Top of Hole: ~161' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
130	30		R-6	8 13 18	108.8	5.4	SC	@ 30' - Clayey SAND: brown, slightly moist, medium dense	
125	35		SPT-3	4 6 7		12.1		@ 35' - Clayey SAND: brown, moist, medium dense	
120	40							Total Depth = 36.5' No Groundwater Encountered Backfilled with Cuttings on 2/23/24	
115	45								
110	50								
105	55								
100	60								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
B BULK SAMPLE
R RING SAMPLE (CA Modified Sampler)
G GRAB SAMPLE
SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
DS DIRECT SHEAR
MD MAXIMUM DENSITY
SA SIEVE ANALYSIS
S&H SIEVE AND HYDROMETER
EI EXPANSION INDEX
CN CONSOLIDATION
CR CORROSION
AL ATTERBERG LIMITS
CO COLLAPSE/SWELL
RV R-VALUE
#200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-6

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 6"
Elevation of Top of Hole: 158' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 3

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
155	0							@0' - Grass	MD EI
								Young Axial Channel Deposits (Qya):	
								@ 2.5' - Sandy CLAY: brown, very moist, very stiff, scattered rootlets	
150	5		R-1	7 10 11	97.5	24.2	CL	@ 5' - Sandy CLAY: brown, very moist, very stiff	
			R-2	6 11 18	109.1	19.1			
			R-3	5 12 17	89.3	18.6	SC	@ 7.5' - Clayey SAND: brown, very moist, medium dense	
145	10		R-4	12 14 16	112.9	15.7	CL	@ 10' - Sandy CLAY: brown, moist, very stiff	
140	15		SPT-1	3 5 6		12.6	SC	@ 15' - Clayey SAND: reddish brown, moist, medium dense	
135	20		R-5	11 16 26	108.9	3.9	SM-CL	@ 20' - Silty SAND to Sandy CLAY: brown, slightly moist, dense/hard, traces of gravel	
130	25		SPT-2	4 4 6		13.4	SC	@ 25' - Clayey SAND: brown, moist, medium dense	
30									



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SAMPLE TYPES:	TEST TYPES:
B BULK SAMPLE	DS DIRECT SHEAR
R RING SAMPLE (CA Modified Sampler)	MD MAXIMUM DENSITY
G GRAB SAMPLE	SA SIEVE ANALYSIS
SPT STANDARD PENETRATION TEST SAMPLE	S&H SIEVE AND HYDROMETER
	EI EXPANSION INDEX
	CN CONSOLIDATION
	CR CORROSION
	AL ATTERBERG LIMITS
	CO COLLAPSE/SWELL
	RV R-VALUE
	-#200 % PASSING # 200 SIEVE

GROUNDWATER TABLE

Geotechnical Boring Log Borehole HS-6

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 6"
Elevation of Top of Hole: ~158' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 3

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
125	30		R-6	8 8 10	88.3	19.7	ML	@ 30' - Sandy SILT: pale brown, very moist, medium dense	
120	35		SPT-3	4 5 6		9.6	SC	@ 35' - Clayey SAND: brown, moist, medium dense	
115	40		R-7	7 12 20	109.4	13.3		@ 40' - Clayey SAND: brown, moist, medium dense	
110	45		SPT-4	5 7 6		12.9		@ 45' - Clayey SAND: brown, moist, medium dense	
105	50		R-8	6 7 12	89.9	30.7	CL	@ 50' - Sandy CLAY: brown, very moist, very stiff	
100	55		SPT-5	2 2 5		22.0		@ 55' - Sandy CLAY: brown, wet, stiff	
60									



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 -#200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-6

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 6"
Elevation of Top of Hole: ~158' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 3 of 3

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
60			R-9	8 13 15	92.7	31.3	CL	@ 60' - Sandy CLAY: brown, wet, very stiff	
95									
65			SPT-6	2 3 6		21.8		@ 65' - Sandy CLAY: brown, wet, stiff	
90									
70			R-10	9 13 22	102.2	24.0		@ 70' - Sandy CLAY: brown, wet, very stiff	
85								Total Depth = 71.5'	
								Groundwater encountered at 54'	
								Backfilled with Cuttings on 2/23/24	
75									
80									
80									
75									
85									
70									
90									



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 -#200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole I-3

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~160' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
155	0		R-1	6 19 19	87.2	14.4	SC	@0' - Grass Young Axial Channel Deposits (Qya): @ 2.5' - Clayey SAND: brown, very moist, dense, traces of roots	
155	5		R-2	11 18 23	87.5	13.8		@ 5' - Clayey SAND: pale brown, very moist, dense	
150	10		R-3	9 12 17	88.1	11.7	CL	@ 8.5' - Sandy CLAY: brown, moist, very stiff	#200
145	15							Total Depth = 10' No Groundwater Encountered 3" Perforated Pipe with Filter Sock and Gravel Installed Pipe Removed and Backfilled with Cuttings on 2/26/2024	
140	20								
135	25								
130	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole I-4

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~159' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
155	0		R-1	6 9 13	103.9	15.0	CL	@0' - Grass Young Axial Channel Deposits (Qya): @ 2.5' - Sandy CLAY: dark brown, moist, very stiff, traces of roots.	
150	5		R-2	12 14 14	74.6	14.6	SC	@ 5' - Clayey SAND: pale brown, very moist, medium dense.	
145	10		R-3	19 32 41	118.6	12.4	CL	@ 8.5' - Sandy CLAY: dark brown, moist, hard.	
140	15							Total Depth = 10' No Groundwater Encountered 3" Perforated Pipe with Filter Sock and Gravel Installed Pipe Removed and Backfilled with Cuttings on 2/26/2024	
135	20								
130	25								
	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE



TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 -#200 % PASSING # 200 SIEVE

Appendix C
Laboratory Test Results

APPENDIX C

Laboratory Testing Procedures and Test Results

The laboratory testing program was formulated towards providing data relating to the relevant engineering properties of the soils with respect to residential construction. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on relatively undisturbed samples obtained from the test borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined from undisturbed or disturbed samples.

Grain Size Distribution/Fines Content: Representative samples were dried, weighed and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve (ASTM D1140). Where applicable, the portion retained on the No. 200 sieve and dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D6913 (sieve).

Sample Location	Description	% Passing # 200 Sieve
I-1 @ 8.5 feet	Clayey Sand	48
I-3 @ 8.5 feet	Sandy Clay	68

Expansion Index: The expansion potential of selected samples was evaluated by the Expansion Index Test, Standard ASTM D4829. Specimens are molded under a given compactive energy to approximately the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch-thick by 4-inch-diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below.

Sample Location	Expansion Index	Expansion Potential*
HS-3 @ 1-5 feet	112	High
HS-6 @ 1-5 feet	135	Very High

* ASTM D4829

Maximum Density Tests: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented in the table below:

APPENDIX C (Cont'd)

Laboratory Testing Procedures and Test Results

Sample Location	Sample Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
HS-3 @ 1-5 feet	Dark Grayish Brown Clay	117.5	12.5
HS-6 @ 1-5 feet	Dark Brown Sandy Clay	115.0	14.0

Collapse/Swell Potential: Six collapse tests were performed per ASTM D4546. A sample (2.4 inches in diameter and 1-inch in height) was placed in a consolidometer and loaded to the approximate in-situ effective stress. The curve is presented in this Appendix.

Chloride Content: Chloride content was tested in accordance with Caltrans Test Method (CTM) 422. The results are presented below.

Sample Location	Chloride Content, ppm
HS-3 @ 1-5 feet	60

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by standard geochemical methods (CTM 417). The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios. The test results are presented in the table below.

Sample Location	Sulfate Content (ppm)	Sulfate Exposure Class *
HS-3 @ 1-5 feet	95	S0

*Based on ACI 318R-14, Table 19.3.1.1

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The results are presented in the table below.

Sample Location	pH	Minimum Resistivity (ohms-cm)
HS-3 @ 1-5 feet	7.90	720

ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-1
 Sample No.: R-4
 Sample Description: Brown lean clay (CL)

Tested By: G. Bathala Date: 05/20/24
 Checked By: J. Ward Date: 05/22/24
 Sample Type: Ring
 Depth (ft.): 10.0

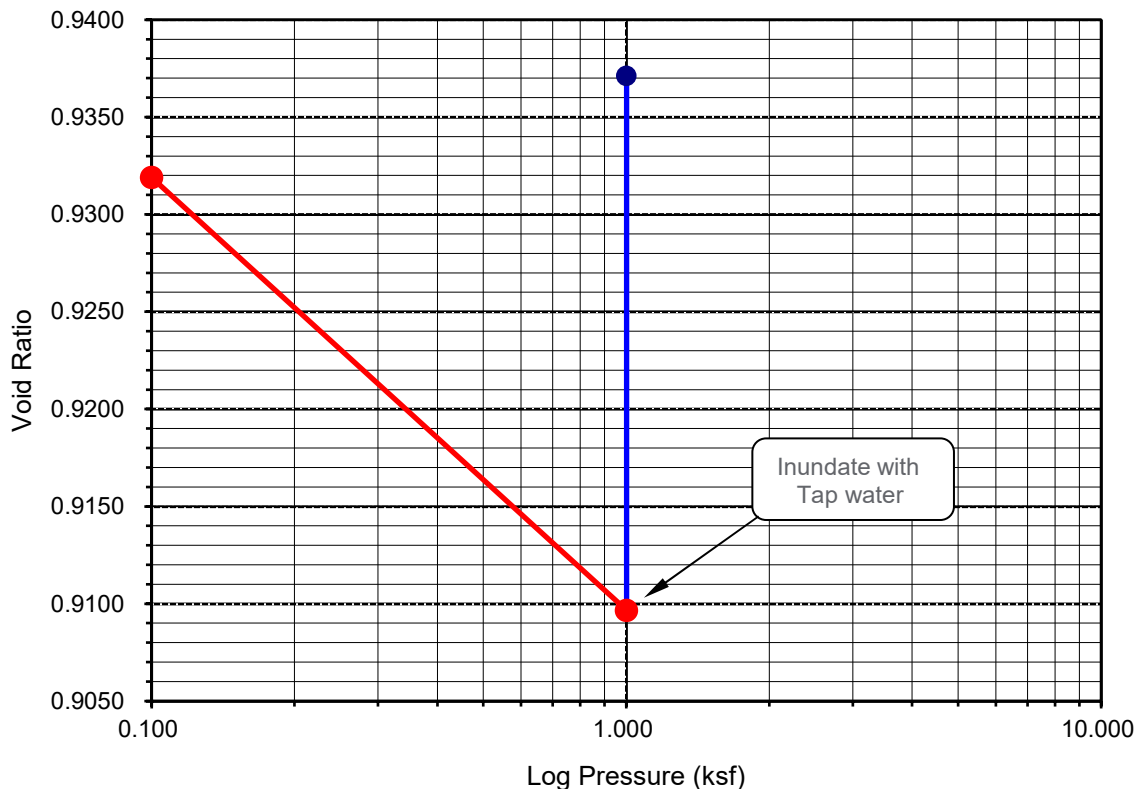
Initial Dry Density (pcf):	87.2
Initial Moisture (%):	22.94
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1187
Diameter(in):	2.415

Final Dry Density (pcf):	87.3
Final Moisture (%) :	31.6
Initial Void ratio:	0.9335
Specific Gravity(assumed):	2.70
Initial Saturation (%)	66.4

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1195	0.9992	0.00	-0.08	0.9319	-0.08
1.000	0.1325	0.9862	0.15	-1.38	0.9097	-1.23
H2O	0.1183	1.0004	0.15	0.04	0.9371	0.19

Percent Swell (+) / Settlement (-) After Inundation = 1.44

Void Ratio - Log Pressure Curve





**ONE-DIMENSIONAL SWELL OR SETTLEMENT
POTENTIAL OF COHESIVE SOILS
ASTM D 4546**

Project Name: Shea - Our Lady of Peace, Irvine
Project No.: 23174-01
Boring No.: HS-2
Sample No.: R-4
Sample Description: Brown silty clay (CL-ML)

Tested By: G. Bathala Date: 05/21/24
Checked By: J. Ward Date: 05/23/24
Sample Type: Ring
Depth (ft.): 10.0

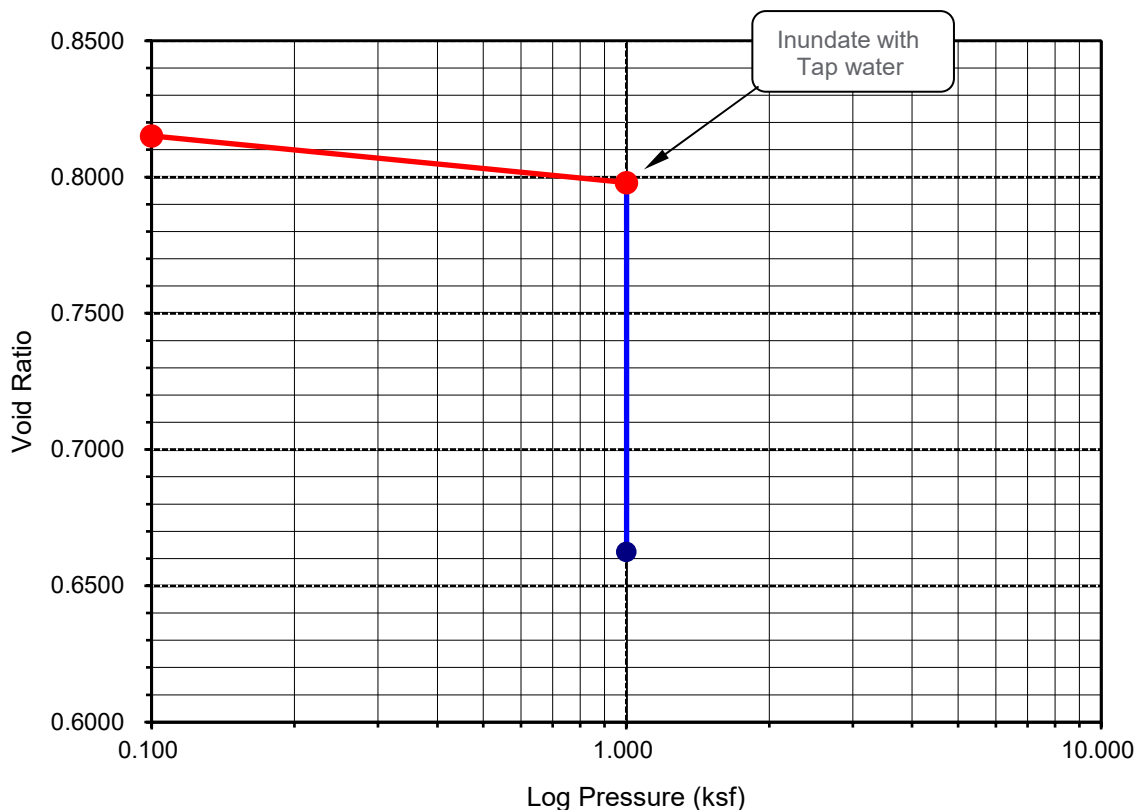
Initial Dry Density (pcf):	92.3
Initial Moisture (%):	7.54
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1122
Diameter(in):	2.415

Final Dry Density (pcf):	101.7
Final Moisture (%) :	20.8
Initial Void ratio:	0.8270
Specific Gravity(assumed):	2.70
Initial Saturation (%)	24.6

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1187	0.9935	0.00	-0.65	0.8151	-0.65
1.000	0.1296	0.9826	0.15	-1.74	0.7980	-1.59
H2O	0.2038	0.9084	0.15	-9.16	0.6624	-9.01

Percent Swell (+) / Settlement (-) After Inundation = -7.54

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-2
 Sample No.: R-5
 Sample Description: Brown silty sand (SM)

Tested By: G. Bathala Date: 03/13/24
 Checked By: J. Ward Date: 03/21/24
 Sample Type: Ring
 Depth (ft.): 15.0

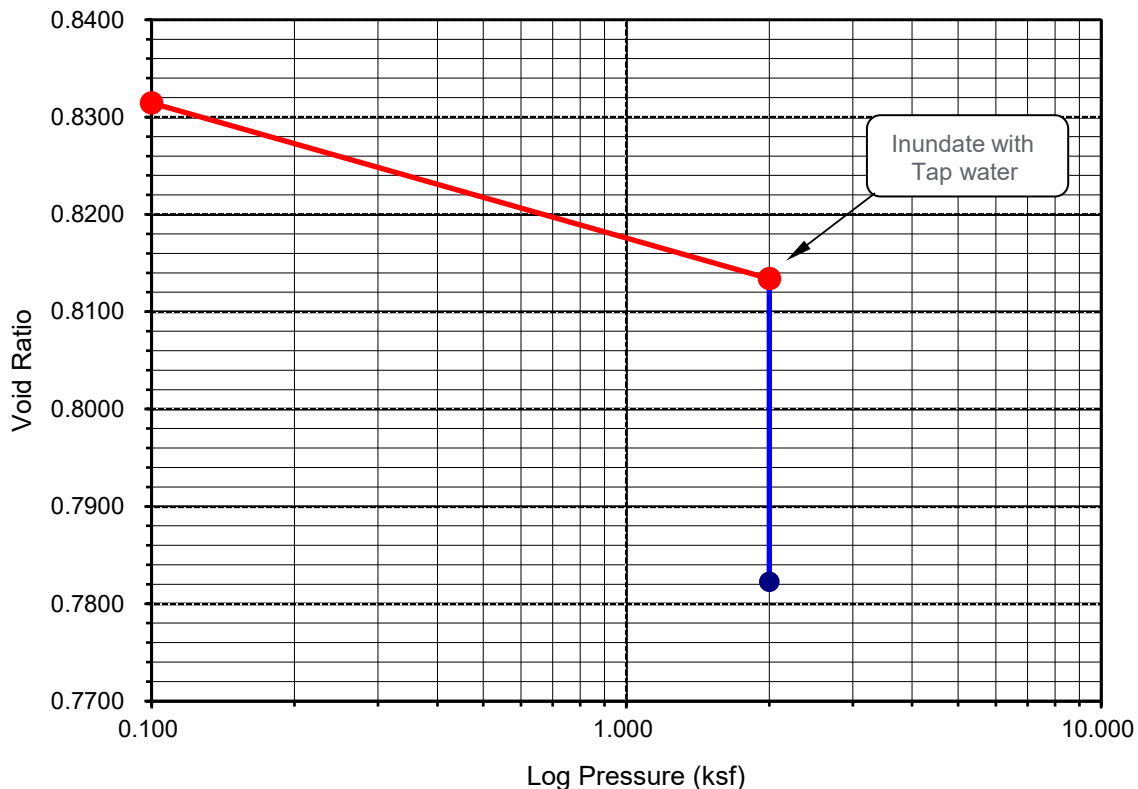
Initial Dry Density (pcf):	92.0
Initial Moisture (%):	8.87
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0680
Diameter(in):	2.415

Final Dry Density (pcf):	95.9
Final Moisture (%) :	22.0
Initial Void ratio:	0.8325
Specific Gravity(assumed):	2.70
Initial Saturation (%)	28.8

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.06855	0.9995	0.00	-0.06	0.8315	-0.06
2.000	0.0849	0.9831	0.65	-1.69	0.8134	-1.04
H2O	0.1019	0.9661	0.65	-3.39	0.7823	-2.74

Percent Swell (+) / Settlement (-) After Inundation = -1.72

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-3
 Sample No.: R-4
 Sample Description: Brown lean clay with sand (CL)s

Tested By: G. Bathala Date: 05/20/24
 Checked By: J. Ward Date: 05/22/24
 Sample Type: Ring
 Depth (ft.): 10.0

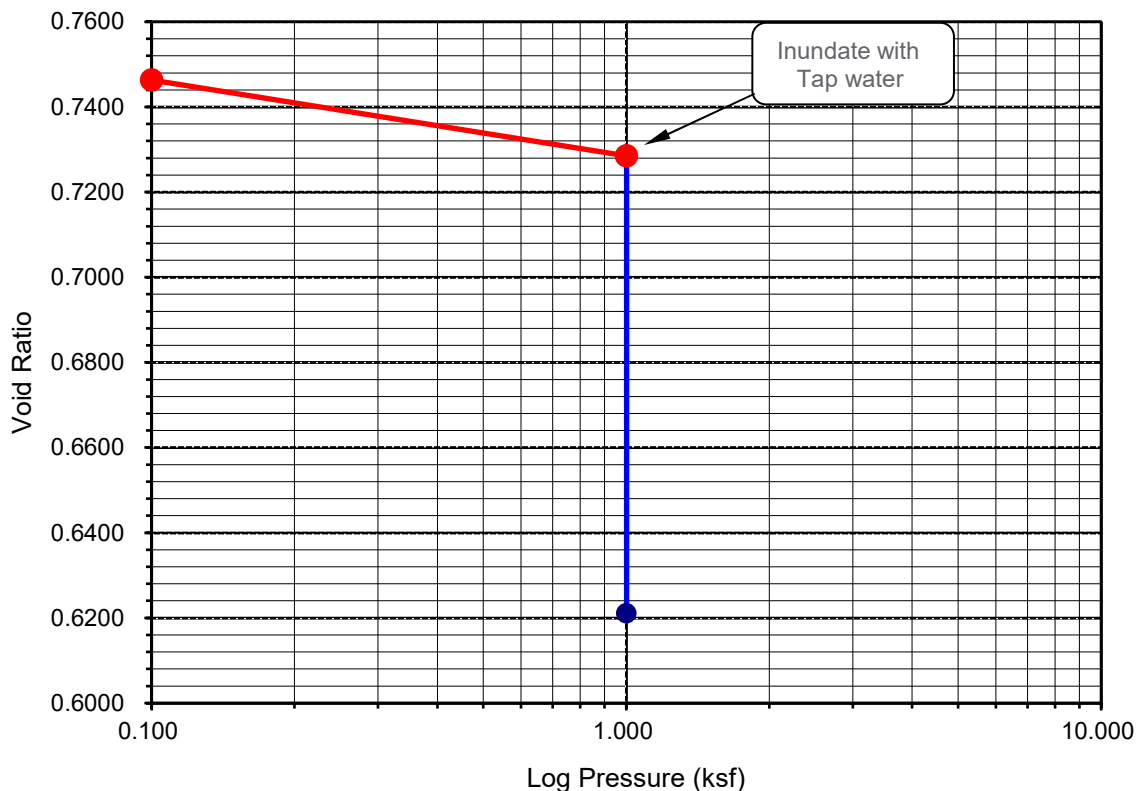
Initial Dry Density (pcf):	96.5
Initial Moisture (%):	5.37
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0967
Diameter(in):	2.415

Final Dry Density (pcf):	104.3
Final Moisture (%) :	19.1
Initial Void ratio:	0.7469
Specific Gravity(assumed):	2.70
Initial Saturation (%)	19.4

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.0970	0.9997	0.00	-0.03	0.7464	-0.03
1.000	0.1087	0.9880	0.15	-1.20	0.7285	-1.05
H2O	0.1702	0.9265	0.15	-7.35	0.6211	-7.20

Percent Swell (+) / Settlement (-) After Inundation = -6.22

Void Ratio - Log Pressure Curve





ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine

Project No.: 23174-01

Boring No.: HS-4

Sample No.: R-4

Sample Description: Brown lean clay (CL)

Tested By: G. Bathala

Date: 05/21/24

Checked By: J. Ward

Date: 05/23/24

Sample Type: Ring

Depth (ft.): 10.0

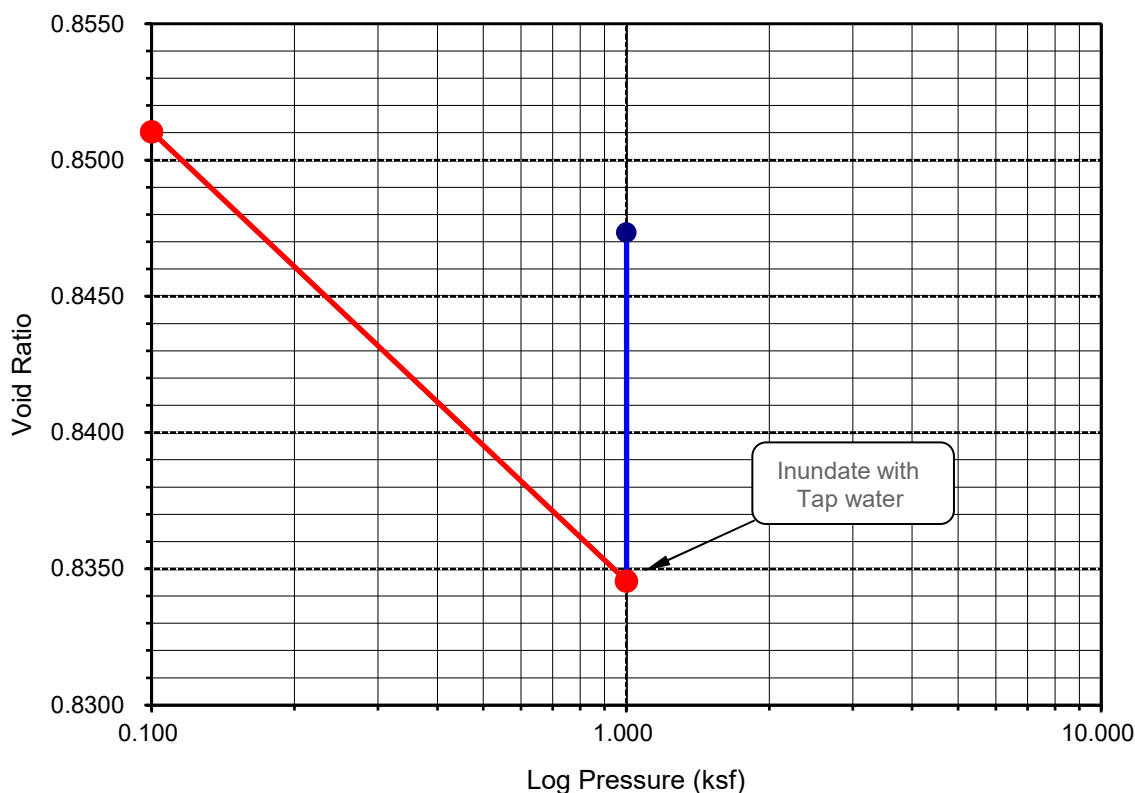
Initial Dry Density (pcf):	91.0
Initial Moisture (%):	13.63
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0961
Diameter(in):	2.415

Final Dry Density (pcf):	91.5
Final Moisture (%) :	24.3
Initial Void ratio:	0.8522
Specific Gravity(assumed):	2.70
Initial Saturation (%)	43.2

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.0967	0.9994	0.00	-0.06	0.8510	-0.06
1.000	0.1071	0.9890	0.15	-1.10	0.8346	-0.95
H2O	0.1002	0.9959	0.15	-0.41	0.8473	-0.26

Percent Swell (+) / Settlement (-) After Inundation = **0.70**

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-5
 Sample No.: R-4
 Sample Description: Olive brown silty clay (CL-ML)

Tested By: G. Bathala Date: 03/13/24
 Checked By: J. Ward Date: 03/21/24
 Sample Type: Ring
 Depth (ft.): 10.0

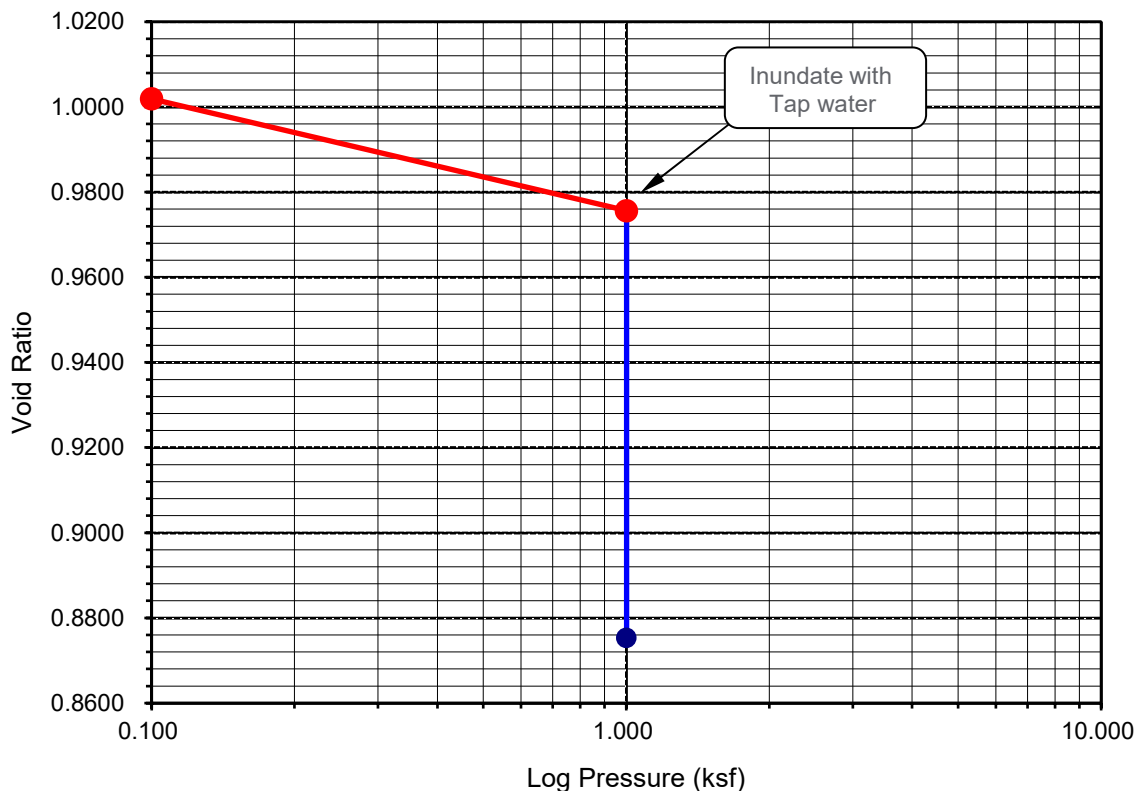
Initial Dry Density (pcf):	84.2
Initial Moisture (%):	12.07
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1519
Diameter(in):	2.415

Final Dry Density (pcf):	90.2
Final Moisture (%) :	25.5
Initial Void ratio:	1.0029
Specific Gravity(assumed):	2.70
Initial Saturation (%)	32.5

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1524	0.9995	0.00	-0.05	1.0019	-0.05
1.000	0.1670	0.9849	0.15	-1.51	0.9757	-1.36
H2O	0.2171	0.9348	0.15	-6.52	0.8753	-6.37

Percent Swell (+) / Settlement (-) After Inundation = -5.08

Void Ratio - Log Pressure Curve



Appendix D
Infiltration Test Data

Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Shea - Our Lady of Peace, Irvine
Project Number: 23174-01
Date: 2/26/2024
Boring Number: I-3

Test hole dimensions (if circular)

Boring Depth (feet)*: 10
Boring Diameter (inches): 8
Pipe Diameter (inches): 3

*measured at time of test

Test pit dimensions (if rectangular)

Pit Depth (feet): _____
Pit Length (feet): _____
Pit Breadth (feet): _____

Minimum test Head (D_o):

(What the sounder tape should read)

Boring Depth - (5 x Boring Radius) 8.4 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:15	7:40	25.0	6.88	6.91	0.03	Yes
2	7:42	8:07	25.0	6.81	6.84	0.03	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Dt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, DD (feet)	Measured Infiltration Rate(in/hr)
1	8:04	8:34	30.0	6.84	6.87	0.03	0.04
2	8:36	9:06	30.0	6.87	6.89	0.02	0.02
3	9:08	9:38	30.0	6.85	6.87	0.02	0.02
4	9:40	10:10	30.0	6.87	6.9	0.03	0.04
5	10:12	10:42	30.0	6.91	6.94	0.03	0.04
6	10:45	11:15	30.0	6.82	6.85	0.03	0.04
7	11:18	11:48	30.0	6.85	6.87	0.02	0.02
8	11:50	12:20	30.0	6.87	6.89	0.02	0.02
9	12:22	12:52	30.0	6.86	6.88	0.02	0.02
10	12:54	13:24	30.0	6.84	6.86	0.02	0.02
11	13:26	13:56	30.0	6.86	6.88	0.02	0.02
12	13:58	14:28	30.0	6.88	6.90	0.02	0.02

Measured Infiltration Rate (No Factor of Safety)

0.02

Sketch:

Notes:

Based on Guidelines from: South Orange County 9/28/2017

Spreadsheet Revised on: 10/30/2019



Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Shea - Our Lady of Peace, Irvine
Project Number: 23174-01
Date: 2/26/2024
Boring Number: I-4

Test hole dimensions (if circular)

Boring Depth (feet)*: 10
Boring Diameter (inches): 8
Pipe Diameter (inches): 3

*measured at time of test

Test pit dimensions (if rectangular)

Pit Depth (feet): _____
Pit Length (feet): _____
Pit Breadth (feet): _____

Minimum test Head (D_o):

(What the sounder tape should read)

Boring Depth - (5 x Boring Radius) 8.4 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:17	7:42	25.0	7.04	7.06	0.02	Yes
2	7:44	8:09	25.0	7.06	7.08	0.02	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Dt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, DD (feet)	Measured Infiltration Rate(in/hr)
1	8:11	8:41	30.0	7.05	7.08	0.03	0.04
2	8:43	9:13	30.0	7.01	7.03	0.02	0.03
3	9:15	9:45	30.0	7.03	7.05	0.02	0.03
4	9:47	10:17	30.0	7.02	7.03	0.01	0.01
5	10:10	10:49	39.0	7.03	7.05	0.02	0.02
6	10:51	11:21	30.0	7.05	7.07	0.02	0.03
7	11:23	11:53	30.0	7.00	7.02	0.02	0.03
8	11:55	12:25	30.0	7.02	7.03	0.01	0.01
9	12:28	12:58	30.0	7.03	7.05	0.02	0.03
10	13:00	13:30	30.0	7.05	7.06	0.01	0.01
11	13:32	14:02	30.0	7.05	7.06	0.01	0.01
12	14:04	14:34	30.0	7.06	7.07	0.01	0.01
Measured Infiltration Rate (No Factor of Safety)							0.01

Sketch:

Notes:

Based on Guidelines from: South Orange County 9/28/2017

Spreadsheet Revised on: 10/30/2019



Appendix E
General Earthwork and Grading
Specifications for Rough Grading

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork

contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Over-excavation

In addition to removals and over-excavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be over-excavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

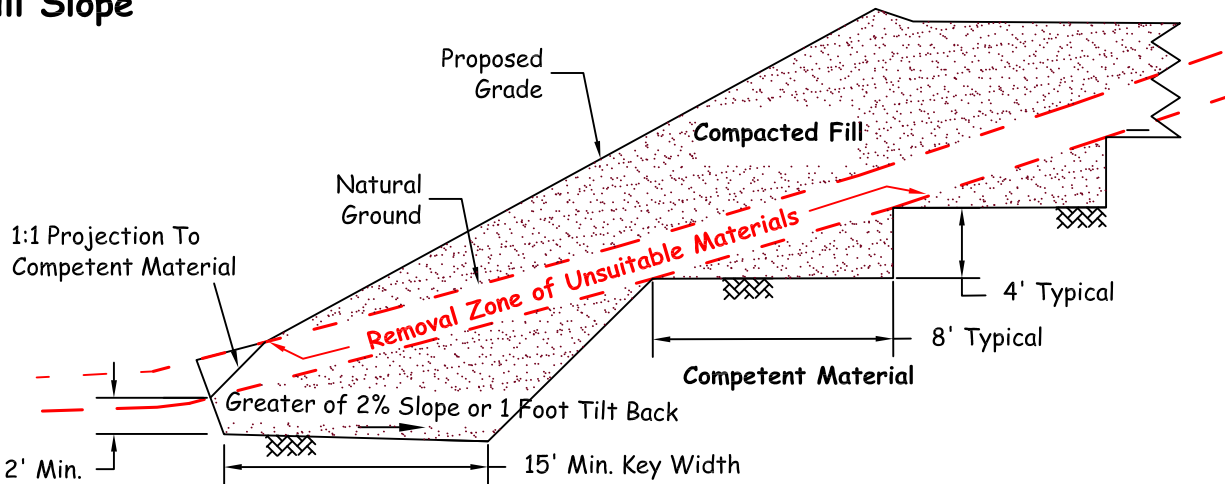
7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over

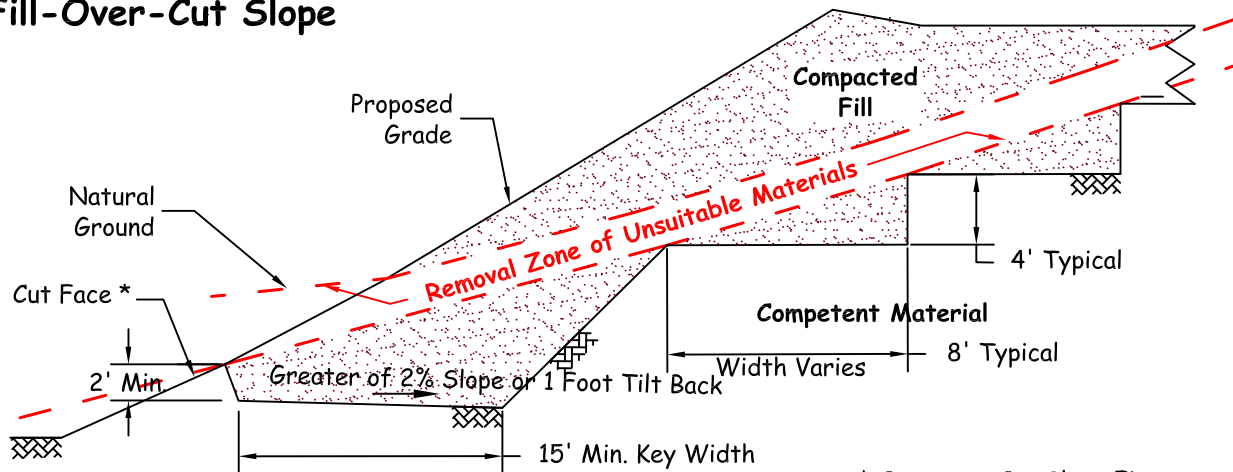
the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

- 7.3** The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.
- 7.4** The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.
- 7.5** Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

Fill Slope

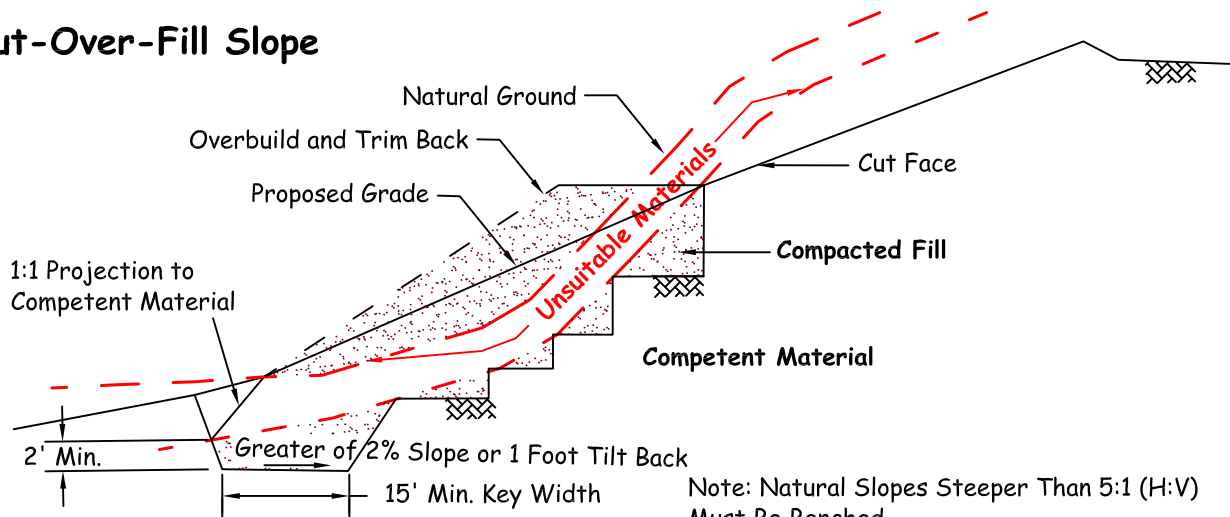


Fill-Over-Cut Slope

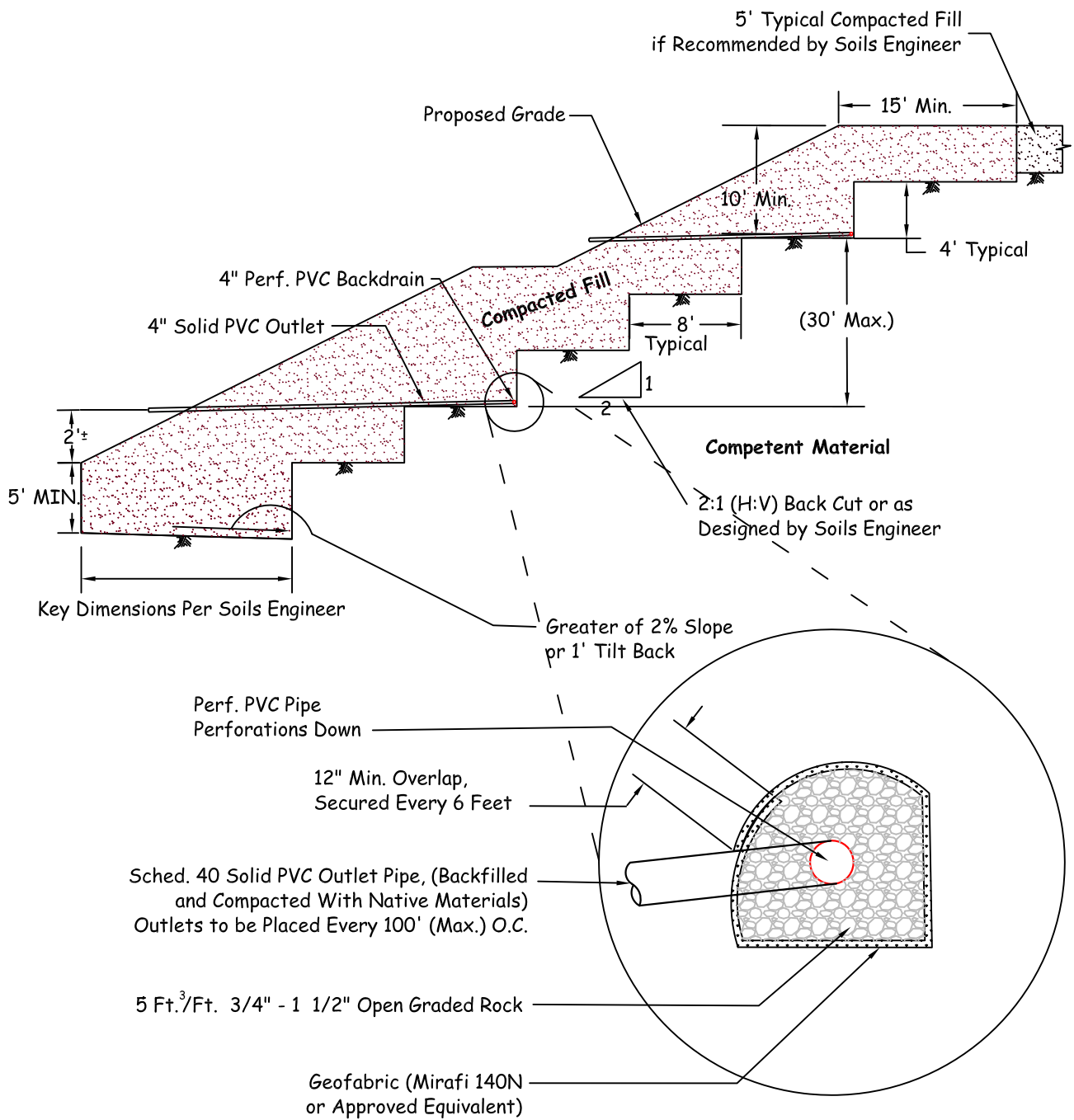


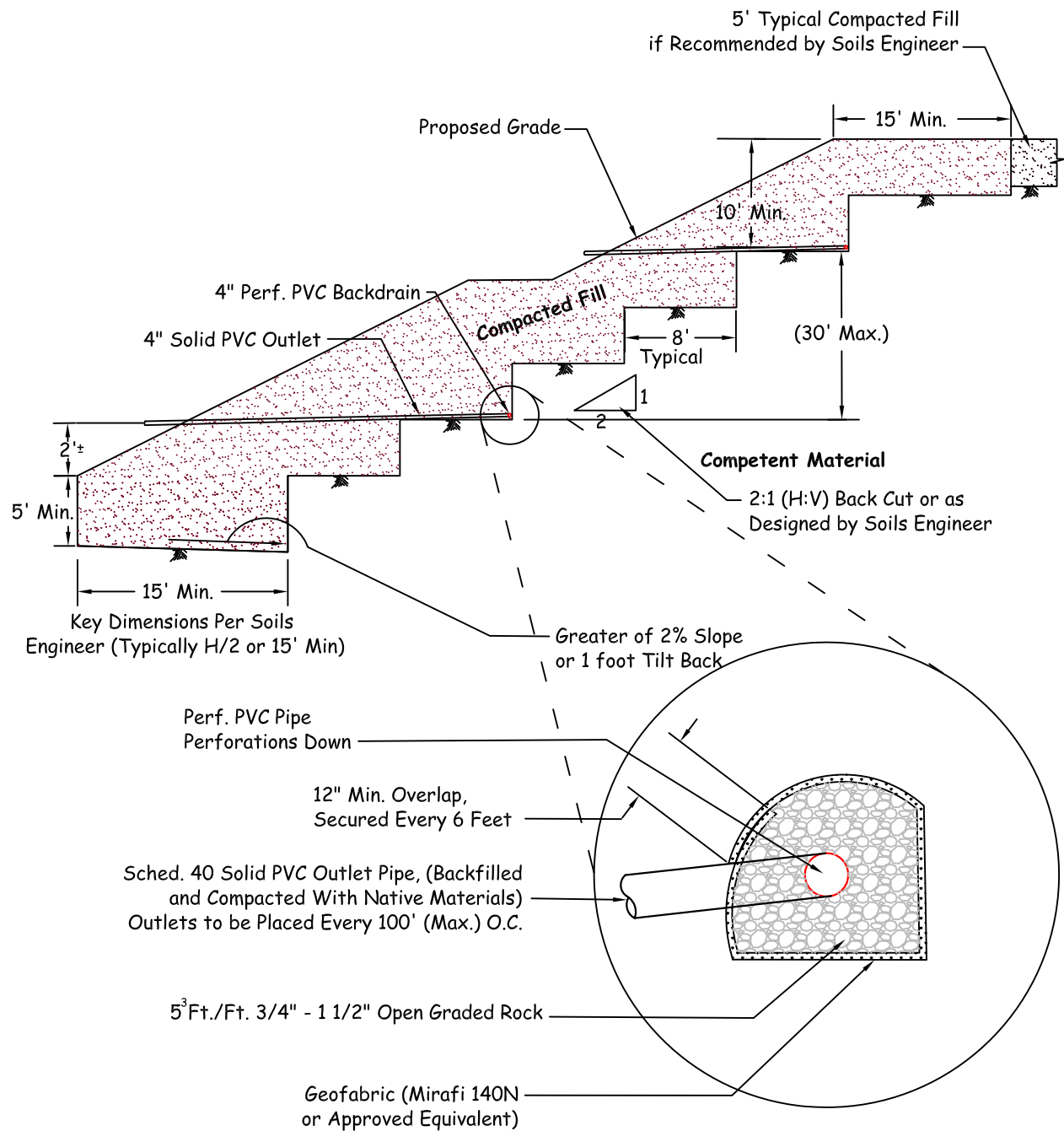
* Construct Cut Slope First

Cut-Over-Fill Slope

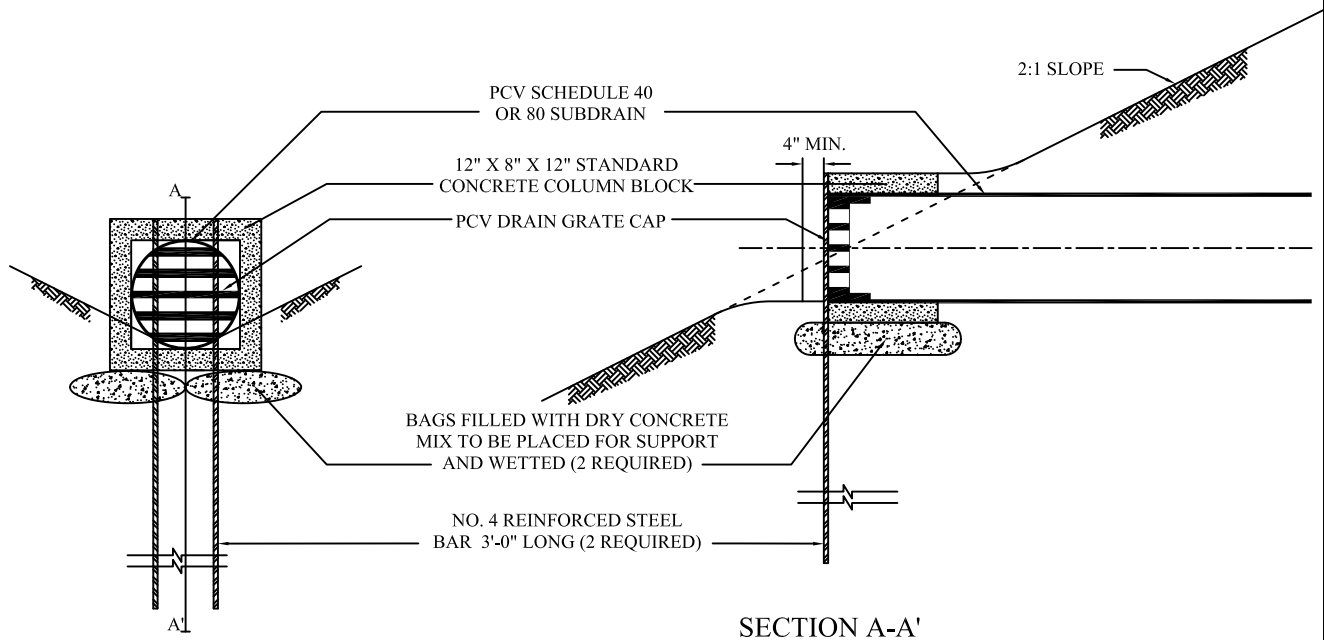


Note: Natural Slopes Steeper Than 5:1 (H:V) Must Be Benched.

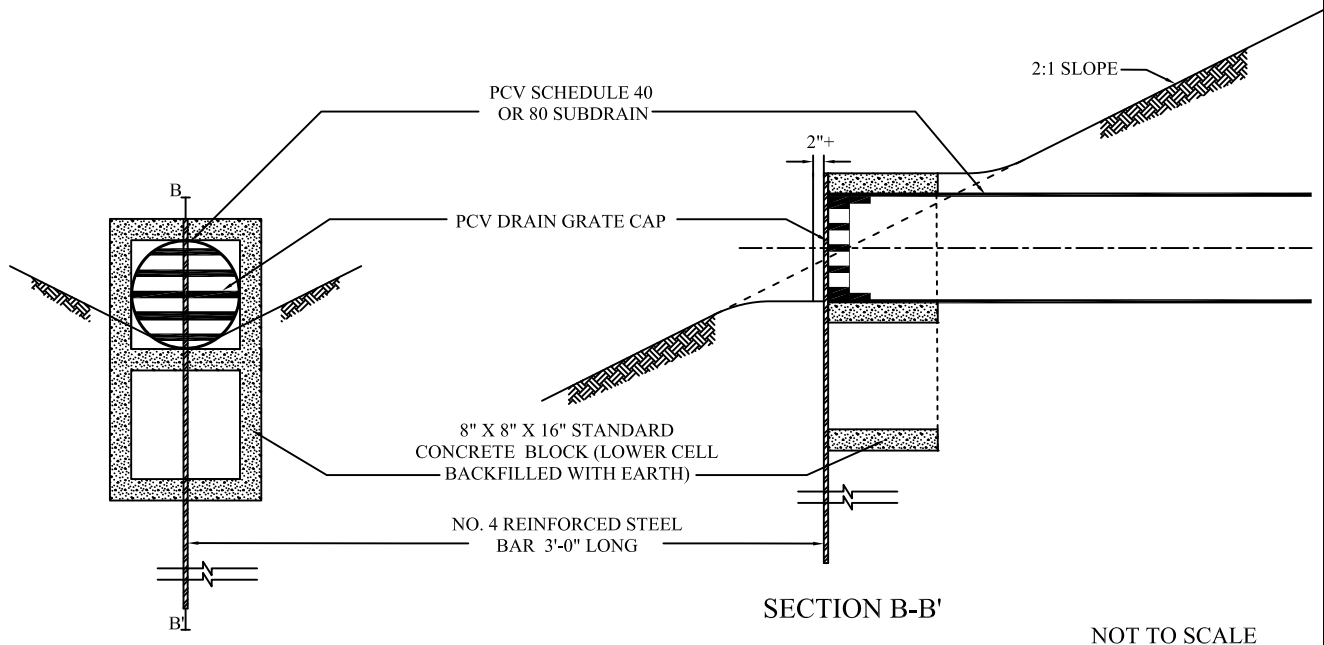




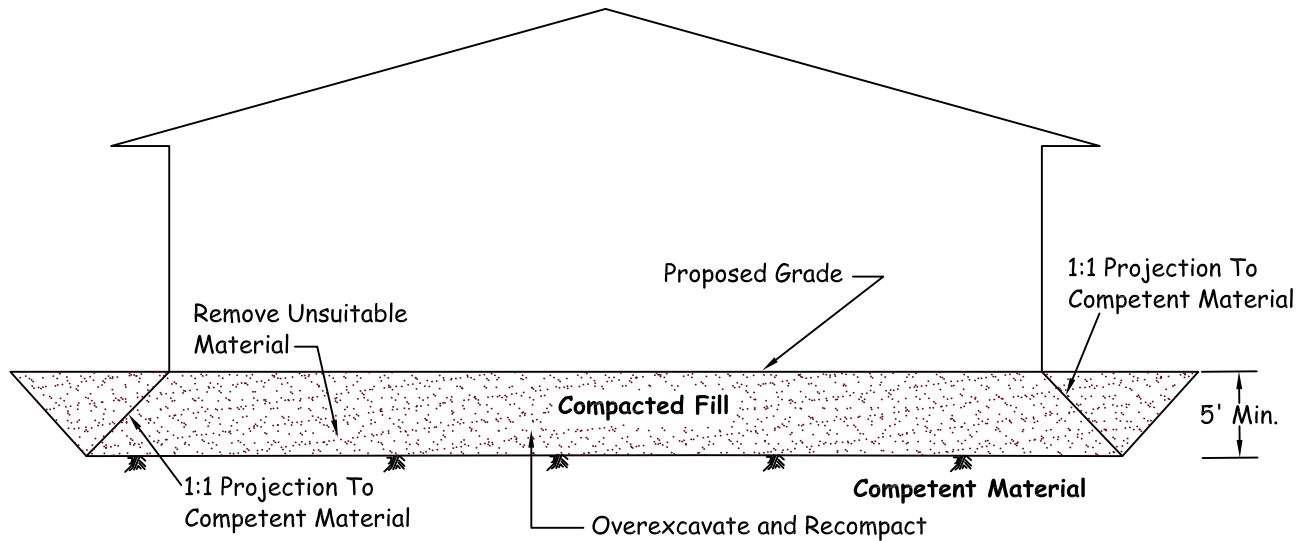
SUBDRAIN OUTLET MARKER -6" & 8" PIPE



SUBDRAIN OUTLET MARKER -4" PIPE



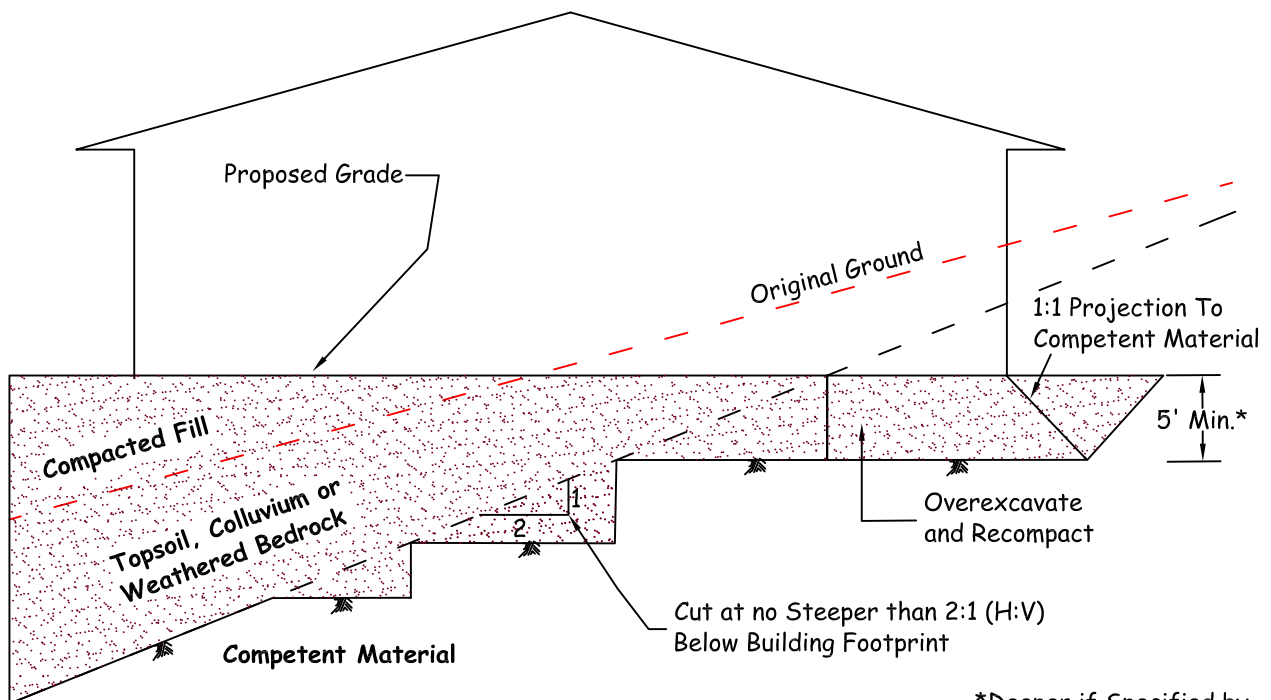
Cut Lot (Exposing Unsuitable Soils at Design Grade)



Note 1: Removal Bottom Should be Graded With Minimum 2% Fall Towards Street or Other Suitable Area (as Determined by Soils Engineer) to Avoid Ponding Below Building

Note 2: Where Design Cut Lots are Excavated Entirely Into Competent Material, Overexcavation May Still be Required for Hard-Rock Conditions or for Materials With Variable Expansion Characteristics.

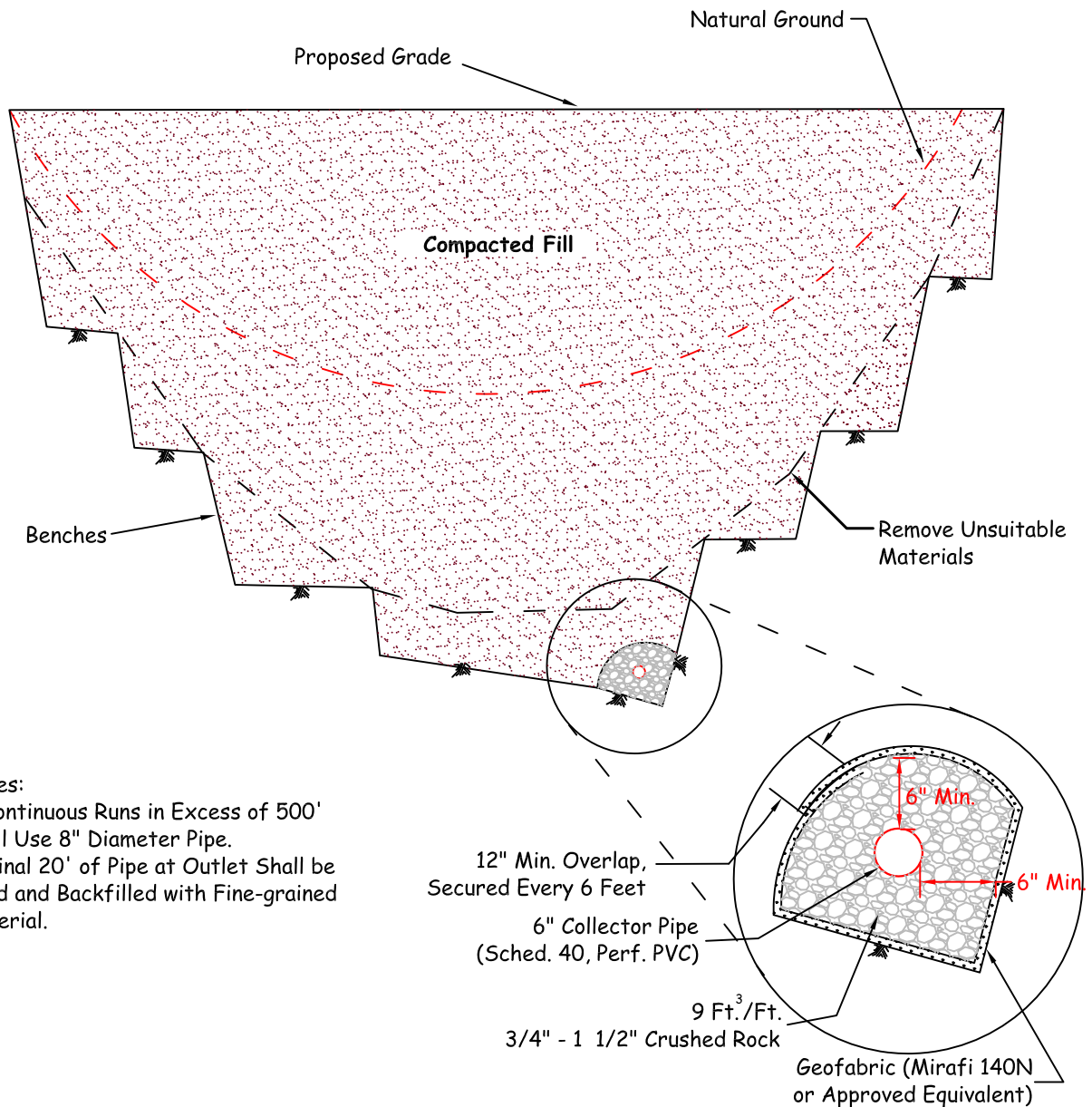
Cut/Fill Transition Lot



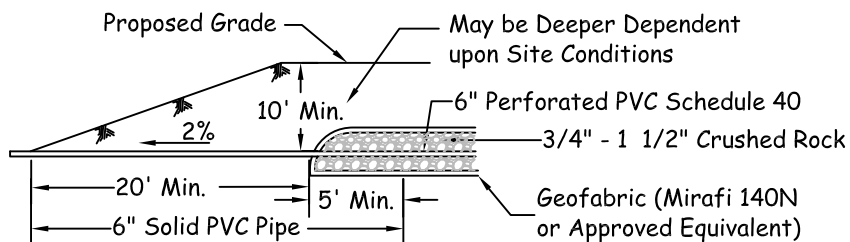
*Deeper if Specified by Soils Engineer

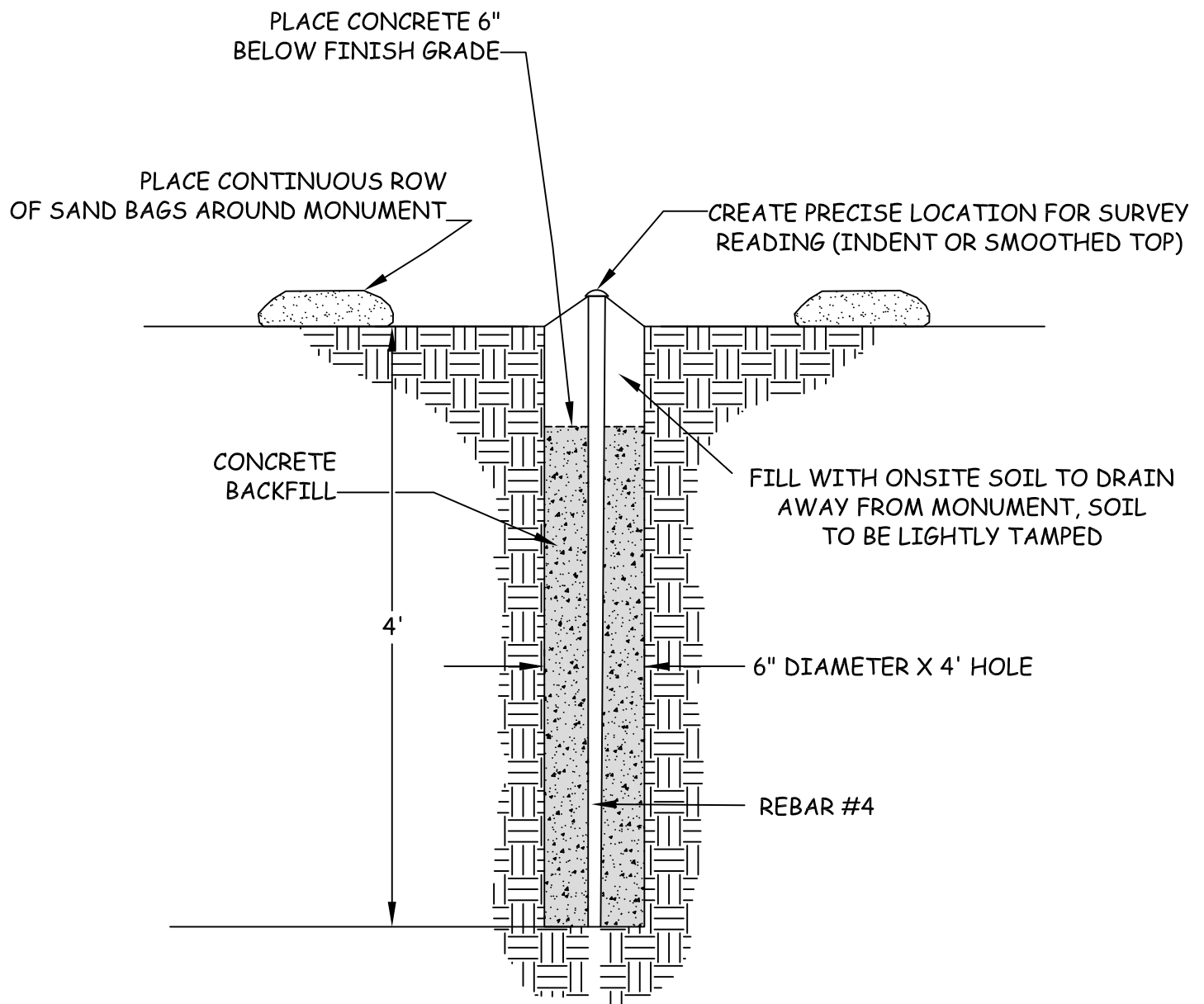


CUT AND TRANSITION LOT OVEREXCAVATION DETAIL



Proposed Outlet Detail

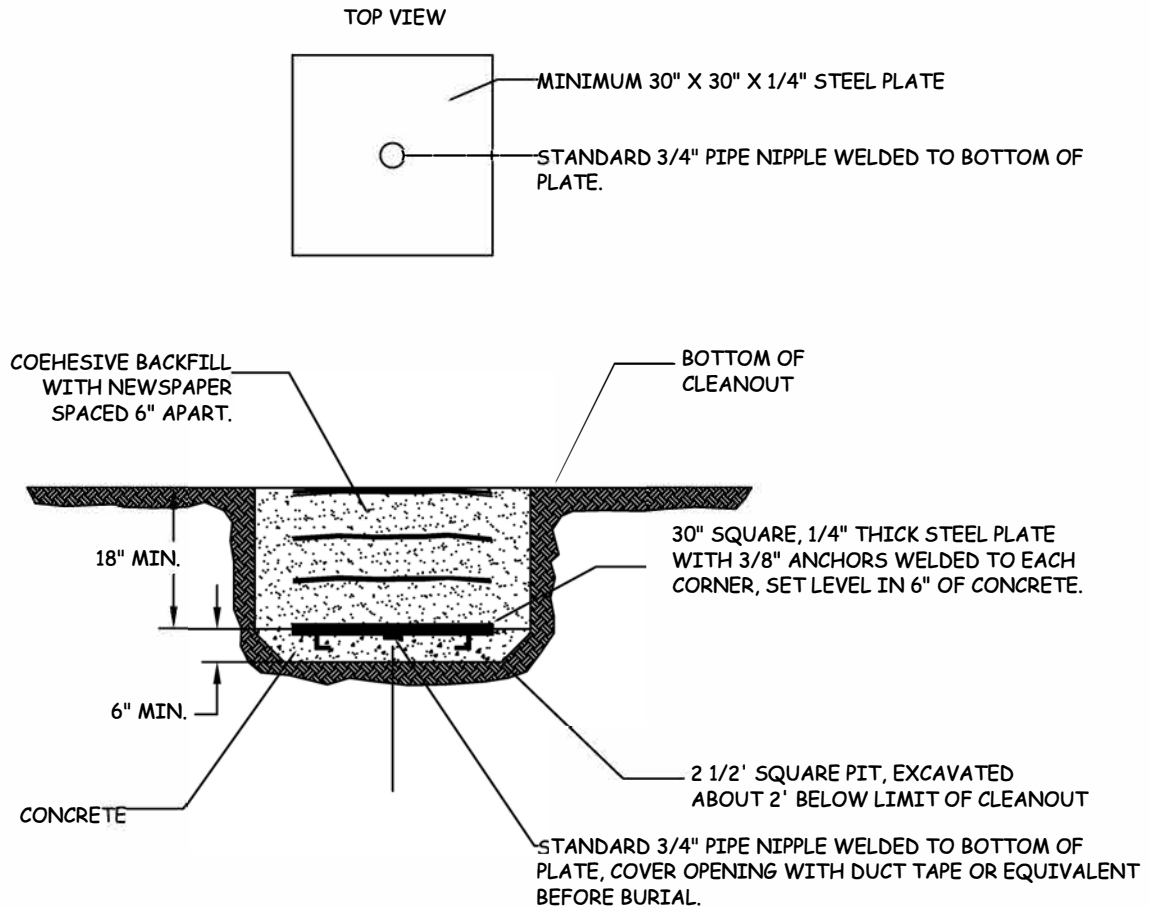




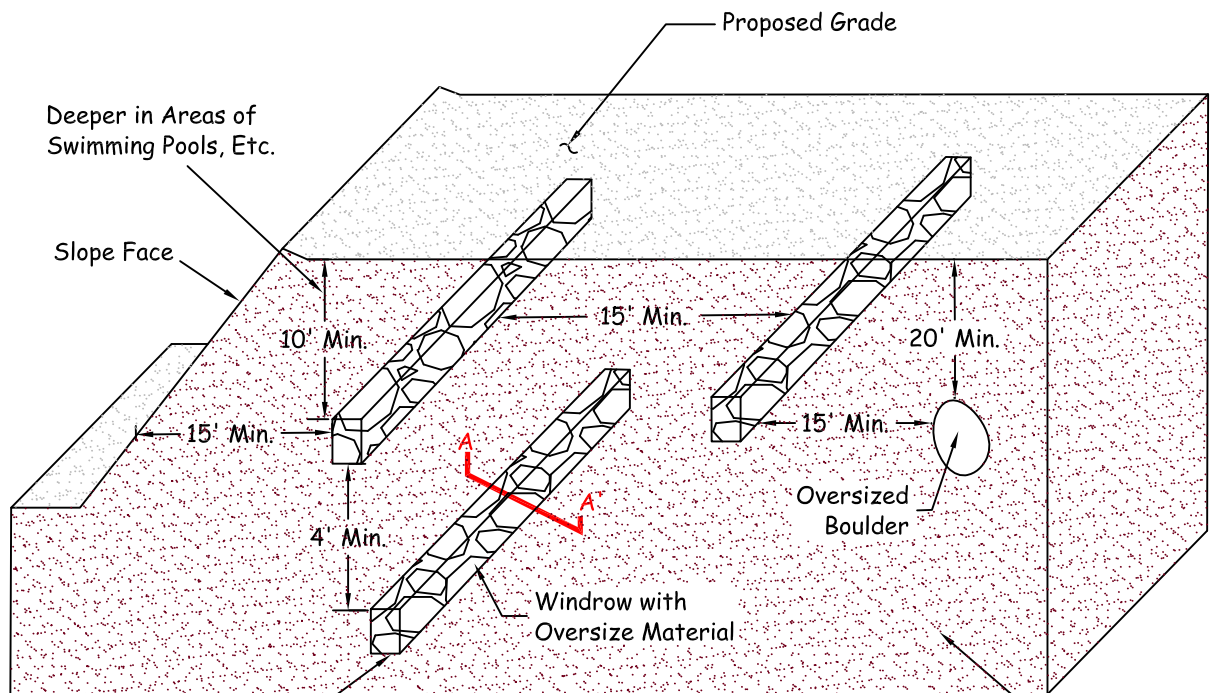
NO CONSTRUCTION EQUIPMENT WITHIN 25 FEET
OF ANY INSTALLED SETTLEMENT MONUMENTS



TYPICAL SURFACE SETTLEMENT MONUMENT



1. SURVEY FOR HORIZONTAL AND VERTICAL LOCATION TO NEAREST .01 INCH PRIOR TO BACKFILL USING KNOW LOCATIONS THAT WILL REMAIN INTACT DURING THE DURATION OF THE MONITORING PROGRAM. KNOW POINTS EXPLICITLY NOT ALLOWED ARE THOSE LOCATED ON FILL OR THAT WILL BE DESTROYED DURING GRADING.
2. IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE DURING GRADING, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE GEOTECHNICAL ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.
3. DRILL TO RECOVER AND ATTACH RISER PIPE.



Windrow Parallel to Slope Face

Jetted or Flooded Approved Granular Material

Excavated Trench or Dozer V-cut

Compacted Fill

Note: Oversize Rock is Larger than 8" in Maximum Dimension.

Section A-A'



OVERSIZE ROCK DISPOSAL DETAIL

Attachment E: 2 Year Storm Hydrology

RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2015 Advanced Engineering Software (aes)
Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* OLP CHURCH *
* EXISTING *
* 2 YEAR *

FILE NAME: CHRCHEX2.DAT
TIME/DATE OF STUDY: 13:46 11/08/2025

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0312 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 100.00 TO NODE 110.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 260.00

ELEVATION DATA: UPSTREAM(FEET) = 164.50 DOWNSTREAM(FEET) = 160.30

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 11.079

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.434

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
-------------------------------	-------------------	-----------------	-----------------	-----------------	-----------	-----------------

NATURAL POOR COVER

"BARREN"	C	0.38	0.25	1.000	91	11.08
----------	---	------	------	-------	----	-------

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 1.000

SUBAREA RUNOFF(CFS) = 0.40

TOTAL AREA(ACRES) = 0.38 PEAK FLOW RATE(CFS) = 0.40

FLOW PROCESS FROM NODE 110.00 TO NODE 111.00 IS CODE = 51

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 160.30 DOWNSTREAM(FEET) = 158.30

CHANNEL LENGTH THRU SUBAREA(FEET) = 115.00 CHANNEL SLOPE = 0.0174

CHANNEL BASE(FEET) = 70.00 "Z" FACTOR = 5.000

MANNING'S FACTOR = 0.015 MAXIMUM DEPTH(FEET) = 1.00

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.260

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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COMMERCIAL	C	0.34	0.25	0.100	69
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SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.59

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 0.68

AVERAGE FLOW DEPTH(FEET) = 0.01 TRAVEL TIME(MIN.) = 2.81

T_c (MIN.) = 13.88

SUBAREA AREA(ACRES) = 0.34 SUBAREA RUNOFF(CFS) = 0.38

EFFECTIVE AREA(ACRES) = 0.72 AREA-AVERAGED F_m (INCH/HR) = 0.14

AREA-AVERAGED F_p (INCH/HR) = 0.25 AREA-AVERAGED A_p = 0.57

TOTAL AREA(ACRES) = 0.7 PEAK FLOW RATE(CFS) = 0.72

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.01 FLOW VELOCITY(FEET/SEC.) = 0.83

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 375.00 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 111.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:
TIME OF CONCENTRATION(MIN.) = 13.88
RAINFALL INTENSITY(INCH/HR) = 1.26
AREA-AVERAGED Fm(INCH/HR) = 0.14
AREA-AVERAGED Fp(INCH/HR) = 0.25
AREA-AVERAGED Ap = 0.57
EFFECTIVE STREAM AREA(ACRES) = 0.72
TOTAL STREAM AREA(ACRES) = 0.72
PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.72

FLOW PROCESS FROM NODE 120.00 TO NODE 121.00 IS CODE = 21

>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 285.00
ELEVATION DATA: UPSTREAM(FEET) = 164.20 DOWNSTREAM(FEET) = 158.70

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 11.092
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.433
SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
NATURAL POOR COVER "BARREN"	C	0.61	0.25	1.000	91	11.09

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000
SUBAREA RUNOFF(CFS) = 0.65
TOTAL AREA(ACRES) = 0.61 PEAK FLOW RATE(CFS) = 0.65

FLOW PROCESS FROM NODE 121.00 TO NODE 111.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
>>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<

=====

TOTAL NUMBER OF STREAMS = 2
CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
TIME OF CONCENTRATION(MIN.) = 11.09
RAINFALL INTENSITY(INCH/HR) = 1.43
AREA-AVERAGED Fm(INCH/HR) = 0.25
AREA-AVERAGED Fp(INCH/HR) = 0.25

AREA-AVERAGED $A_p = 1.00$
 EFFECTIVE STREAM AREA(ACRES) = 0.61
 TOTAL STREAM AREA(ACRES) = 0.61
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 0.65

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	0.72	13.88	1.260	0.25(0.14)	0.57	0.7	100.00
2	0.65	11.09	1.433	0.25(0.25)	1.00	0.6	120.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.32	11.09	1.433	0.25(0.20)	0.79	1.2	120.00
2	1.28	13.88	1.260	0.25(0.19)	0.77	1.3	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 1.32 Tc(MIN.) = 11.09
 EFFECTIVE AREA(ACRES) = 1.19 AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED $A_p = 0.79$
 TOTAL AREA(ACRES) = 1.3
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 111.00 = 375.00 FEET.

FLOW PROCESS FROM NODE 111.00 TO NODE 112.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 158.30 DOWNSTREAM(FEET) = 156.20
 FLOW LENGTH(FEET) = 140.00 MANNING'S N = 0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 3.9 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.61
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.32
 PIPE TRAVEL TIME(MIN.) = 0.51 Tc(MIN.) = 11.60
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 112.00 = 515.00 FEET.

FLOW PROCESS FROM NODE 112.00 TO NODE 112.00 IS CODE = 1

>>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<

=====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 1 ARE:

TIME OF CONCENTRATION(MIN.) = 11.60
 RAINFALL INTENSITY(INCH/HR) = 1.40
 AREA-AVERAGED Fm(INCH/HR) = 0.20
 AREA-AVERAGED Fp(INCH/HR) = 0.25
 AREA-AVERAGED Ap = 0.79
 EFFECTIVE STREAM AREA(ACRES) = 1.19
 TOTAL STREAM AREA(ACRES) = 1.33
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.32

FLOW PROCESS FROM NODE 130.00 TO NODE 131.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<
 >>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

INITIAL SUBAREA FLOW-LENGTH(FEET) = 230.00
 ELEVATION DATA: UPSTREAM(FEET) = 162.20 DOWNSTREAM(FEET) = 157.70

$T_c = K * [(LENGTH ** 3.00) / (ELEVATION CHANGE)] ** 0.20$
 SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.879
 * 2 YEAR RAINFALL INTENSITY(INCH/HR) = 2.063
 SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	C	0.29	0.25	0.100	69	5.88
NATURAL POOR COVER "BARREN"	C	0.53	0.25	1.000	91	10.15

 SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.682
 SUBAREA RUNOFF(CFS) = 1.40
 TOTAL AREA(ACRES) = 0.82 PEAK FLOW RATE(CFS) = 1.40

FLOW PROCESS FROM NODE 131.00 TO NODE 112.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
 >>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

ELEVATION DATA: UPSTREAM(FEET) = 157.70 DOWNSTREAM(FEET) = 156.20
 FLOW LENGTH(FEET) = 150.00 MANNING'S N = 0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.5 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.05
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 1.40
 PIPE TRAVEL TIME(MIN.) = 0.62 T_c (MIN.) = 6.50
 LONGEST FLOWPATH FROM NODE 130.00 TO NODE 112.00 = 380.00 FEET.

FLOW PROCESS FROM NODE 112.00 TO NODE 112.00 IS CODE = 1

 >>>>DESIGNATE INDEPENDENT STREAM FOR CONFLUENCE<<<<<
 >>>>AND COMPUTE VARIOUS CONFLUENCED STREAM VALUES<<<<<
 =====

TOTAL NUMBER OF STREAMS = 2
 CONFLUENCE VALUES USED FOR INDEPENDENT STREAM 2 ARE:
 TIME OF CONCENTRATION(MIN.) = 6.50
 RAINFALL INTENSITY(INCH/HR) = 1.95
 AREA-AVERAGED Fm(INCH/HR) = 0.17
 AREA-AVERAGED Fp(INCH/HR) = 0.25
 AREA-AVERAGED Ap = 0.68
 EFFECTIVE STREAM AREA(ACRES) = 0.82
 TOTAL STREAM AREA(ACRES) = 0.82
 PEAK FLOW RATE(CFS) AT CONFLUENCE = 1.40

** CONFLUENCE DATA **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	1.32	11.60	1.397	0.25(0.20)	0.79	1.2	120.00
1	1.28	14.40	1.234	0.25(0.19)	0.77	1.3	100.00
2	1.40	6.50	1.948	0.25(0.17)	0.68	0.8	130.00

RAINFALL INTENSITY AND TIME OF CONCENTRATION RATIO
 CONFLUENCE FORMULA USED FOR 2 STREAMS.

** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	Fp(Fm) (INCH/HR)	Ap	Ae (ACRES)	HEADWATER NODE
1	2.47	6.50	1.948	0.25(0.18)	0.73	1.5	130.00
2	2.28	11.60	1.397	0.25(0.19)	0.75	2.0	120.00
3	2.11	14.40	1.234	0.25(0.18)	0.74	2.2	100.00

COMPUTED CONFLUENCE ESTIMATES ARE AS FOLLOWS:

PEAK FLOW RATE(CFS) = 2.47 Tc(MIN.) = 6.50
 EFFECTIVE AREA(ACRES) = 1.48 AREA-AVERAGED Fm(INCH/HR) = 0.18
 AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.73
 TOTAL AREA(ACRES) = 2.2
 LONGEST FLOWPATH FROM NODE 100.00 TO NODE 112.00 = 515.00 FEET.

FLOW PROCESS FROM NODE 112.00 TO NODE 112.00 IS CODE = 81

 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
 =====

MAINLINE Tc(MIN.) = 6.50
 * 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.948
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	C	0.22	0.25	0.100	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, $F_p(\text{INCH/HR}) = 0.25$
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, $A_p = 0.100$
 SUBAREA AREA(ACRES) = 0.22 SUBAREA RUNOFF(CFS) = 0.38
 EFFECTIVE AREA(ACRES) = 1.70 AREA-AVERAGED $F_m(\text{INCH/HR}) = 0.16$
 AREA-AVERAGED $F_p(\text{INCH/HR}) = 0.25$ AREA-AVERAGED $A_p = 0.65$
 TOTAL AREA(ACRES) = 2.4 PEAK FLOW RATE(CFS) = 2.74

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 2.4 TC(MIN.) = 6.50
 EFFECTIVE AREA(ACRES) = 1.70 AREA-AVERAGED $F_m(\text{INCH/HR}) = 0.16$
 AREA-AVERAGED $F_p(\text{INCH/HR}) = 0.25$ AREA-AVERAGED $A_p = 0.650$
 PEAK FLOW RATE(CFS) = 2.74

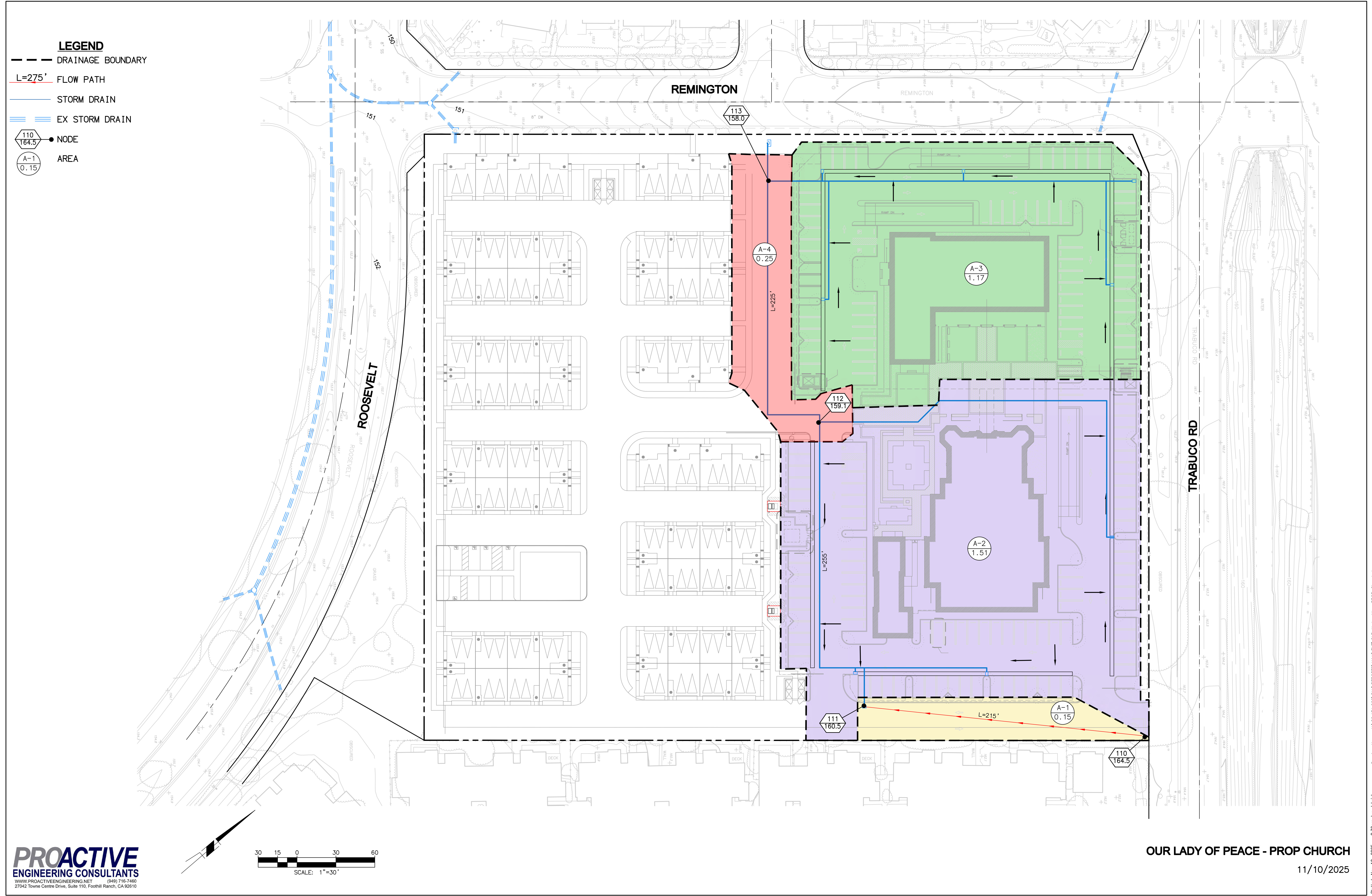
** PEAK FLOW RATE TABLE **

STREAM NUMBER	Q (CFS)	Tc (MIN.)	Intensity (INCH/HR)	$F_p(F_m)$ (INCH/HR)	A_p	A_e (ACRES)	HEADWATER NODE
1	2.74	6.50	1.948	0.25(0.16)	0.65	1.7	130.00
2	2.45	11.60	1.397	0.25(0.17)	0.68	2.2	120.00
3	2.27	14.40	1.234	0.25(0.17)	0.68	2.4	100.00

=====

END OF RATIONAL METHOD ANALYSIS





RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* OLP CHURCH *
* PROPOSED *
* 2 YEAR *

FILE NAME: CHRCHPR2.DAT
TIME/DATE OF STUDY: 13:53 11/08/2025

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0312 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 110.00 TO NODE 111.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 215.00

ELEVATION DATA: UPSTREAM(FEET) = 164.50 DOWNSTREAM(FEET) = 160.50

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.780

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 2.083

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
COMMERCIAL	C	0.15	0.25	0.100	69	5.78

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA RUNOFF(CFS) = 0.28

TOTAL AREA(ACRES) = 0.15 PEAK FLOW RATE(CFS) = 0.28

FLOW PROCESS FROM NODE 111.00 TO NODE 112.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 160.50 DOWNSTREAM(FEET) = 159.10

FLOW LENGTH(FEET) = 255.00 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000

DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.4 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.02

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.28

PIPE TRAVEL TIME(MIN.) = 2.11 T_c (MIN.) = 7.89

LONGEST FLOWPATH FROM NODE 110.00 TO NODE 112.00 = 470.00 FEET.

FLOW PROCESS FROM NODE 112.00 TO NODE 112.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE T_c (MIN.) = 7.89

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.743

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	C	1.51	0.25	0.100	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.100

SUBAREA AREA(ACRES) = 1.51 SUBAREA RUNOFF(CFS) = 2.33

EFFECTIVE AREA(ACRES) = 1.66 AREA-AVERAGED F_m (INCH/HR) = 0.03

AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.7 PEAK FLOW RATE(CFS) = 2.57

FLOW PROCESS FROM NODE 112.00 TO NODE 113.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 159.10 DOWNSTREAM(FEET) = 158.00
FLOW LENGTH(FEET) = 225.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.4 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.72
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 2.57
PIPE TRAVEL TIME(MIN.) = 1.01 Tc(MIN.) = 8.90
LONGEST FLOWPATH FROM NODE 110.00 TO NODE 113.00 = 695.00 FEET.

FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 8.90
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.626
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	C	0.25	0.25	0.100	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA AREA(ACRES) = 0.25 SUBAREA RUNOFF(CFS) = 0.36
EFFECTIVE AREA(ACRES) = 1.91 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 1.9 PEAK FLOW RATE(CFS) = 2.75

FLOW PROCESS FROM NODE 113.00 TO NODE 113.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 8.90
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.626
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
COMMERCIAL	C	1.17	0.25	0.100	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100

SUBAREA AREA(ACRES) = 1.17 SUBAREA RUNOFF(CFS) = 1.69
EFFECTIVE AREA(ACRES) = 3.08 AREA-AVERAGED Fm(INCH/HR) = 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.10
TOTAL AREA(ACRES) = 3.1 PEAK FLOW RATE(CFS) = 4.44

=====

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 3.1 TC(MIN.) = 8.90
EFFECTIVE AREA(ACRES) = 3.08 AREA-AVERAGED Fm(INCH/HR)= 0.03
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.100
PEAK FLOW RATE(CFS) = 4.44

=====

END OF RATIONAL METHOD ANALYSIS



Water Quality Management Plan (WQMP)

Project Name:

Our Lady of Peace - Residential

Prepared for:

**Roman Catholic Bishop of Orange
13280 Chapman Ave
Garden Grove, CA 92840**

Prepared by:

Proactive Engineering Consultants

Engineer Amy Jaramillo Registration No. 94608

**27051 Towne Centre Dr, Suite 270
Foothill Ranch, CA 92610
949-259-5708**

Prepared on:

November 2025

Preliminary Water Quality Management Plan (PWQMP)
Our Lady of Peace - Residential

Project Owner's Certification			
Permit/ Application No.	00955110-PCPU	Grading Permit No.	N/A
Tract/Parcel Map No.	N/A	Building Permit No.	N/A
CUP, SUP, and/or APN (Specify Lot Numbers if Portions of Tract)			N/A

This Water Quality Management Plan (WQMP) has been prepared for Roman Catholic Bishop of Orange by Proactive Engineering. The WQMP is intended to comply with the requirements of the local NPDES Stormwater Program requiring the preparation of the plan.

The undersigned, while it owns the subject property, is responsible for the implementation of the provisions of this plan and will ensure that this plan is amended as appropriate to reflect up-to-date conditions on the site consistent with the current Orange County Drainage Area Management Plan (DAMP) and the intent of the non-point source NPDES Permit for Waste Discharge Requirements for the County of Orange, Orange County Flood Control District and the incorporated Cities of Orange County within the **Santa Ana Region**. Once the undersigned transfers its interest in the property, its successors-in-interest shall bear the aforementioned responsibility to implement and amend the WQMP. An appropriate number of approved and signed copies of this document shall be available on the subject site in perpetuity.

Owner:			
Title	Deacon Javier H. Rodriguez		
Company	Roman Catholic Bishop of Orange		
Address	13280 Chapman Ave Garden Grove, CA 92840		
Email	jrodriguez@rcbo.org		
Telephone #	714-282-3032		
Signature		Date	

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Attachments

Attachment A	WQMP Site Plan
Attachment B	Worksheets & Calculations
Attachment C	BMP Fact Sheets & Details
Attachment D	Geotechnical Report
Attachment E	2 Year Storm Hydrology

Section I Discretionary Permit(s) and Water Quality Conditions

Provide discretionary permit and water quality information. Refer to Section 2.1 in the *Technical Guidance Document (TGD)* available from the Orange County Stormwater Program (ocwatersheds.com).

Project Information			
Permit/ Application No.	00955110-PCPU	Tract/Parcel Map No.	N/A
Additional Information/ Comments:	N/A		
Water Quality Conditions			
Water Quality Conditions (list verbatim)	N/A		
Watershed-Based Plan Conditions			
Provide applicable conditions from watershed - based plans including WIHMPs and TMDLS.	N/A		

Section II Project Description

II.1 Project Description

Description of Proposed Project				
Development Category (Verbatim from WQMP):	New development projects that create 10,000 square feet or more of impervious surface. This category includes commercial, industrial, residential housing subdivisions, mixed-use, and public projects on private or public property that falls under the planning and building authority or the Permittees.			
Project Area (ft²): 133,294	Number of Dwelling Units: 68		SIC Code: 6513	
Narrative Project Description:	The proposed project replaces an existing church parking lot with 68 apartments, designed as 3 story homes in 3-4 unit buildings.			
Project Area	Pervious		Impervious	
	Area (acres or sq ft)	Percentage	Area (acres or sq ft)	Percentage
Pre-Project Conditions	1.81 acres	50%	1.82 acres	50%
Post-Project Conditions	0.48 acres	16%	2.44 acres	84%
Drainage Patterns/Connections	On-site drainage will be picked up at the end of each alley with small catch basins/grate inlets. From there a storm drain pipe will run along the edge of the property (nearest to Roosevelt) and connect to the existing catch basin at the corner of Roosevelt and Remington. From there it flows in a mainline RCP storm drain in Roosevelt that ranges from 24” to 48”. This pipeline eventually outlets into Central Irvine Channel, then Peters Canyon Channel, into San Diego Creek and then into Newport Bay.			

II.2 Potential Stormwater Pollutants

Pollutants of Concern			
Pollutant	Circle One: E=Expected to be of concern N=Not Expected to be of concern		Additional Information and Comments
Suspended-Solid/ Sediment	☒ E	☐ N	
Nutrients	☒ E	☐ N	
Heavy Metals	☐ E	☒ N	
Pathogens (Bacteria/Virus)	☒ E	☐ N	
Pesticides	☒ E	☐ N	
Oil and Grease	☒ E	☐ N	
Toxic Organic Compounds	☐ E	☒ N	
Trash and Debris	☒ E	☐ N	

II.3 Hydrologic Conditions of Concern

☐ No - Show map

☒ Yes - Describe applicable hydrologic conditions of concern below.

Streams downstream of the project are potentially susceptible to hydromodification, this includes parts of Peters Canyon Channel, San Diego Creek Channel and Newport Bay.

The 2 year 24 hour post development runoff volume is more than 5% greater than the existing condition 2 year 24 hour runoff volume.

II.4 Post Development Drainage Characteristics

On-site drainage will be picked up at the end of each alley with small catch basins/grate inlets. From there a storm drain pipe will run along the edge of the property (nearest to Roosevelt) and connect to the existing catch basin at the corner of Roosevelt and Remington. The downstream flow path will remain unchanged.

II.5 Property Ownership/Management

The property will be owned by the Roman Catholic Bishop of Orange.

Section III Site Description

III.1 Physical Setting

Planning Area/ Community Name	Our Lady of Peace
Location/ Address	14010 Remington
	Irvine, CA 92620
Land Use	Residential
Zoning	Medium-High Density Residential
Acreage	2.92
Predominant Soil Type	C

III.2 Site Characteristics

<i>Precipitation Zone</i>	The Design Capture Storm Depth is 0.80" based on OCTGD Rainfall Zone Figure XVI-1.
<i>Topography</i>	The site is relatively flat with a general grade of 1-2% from northwest to southeast.
<i>Drainage Patterns/Connections</i>	The site generally drains from the west to the east. Today it sheet flows over much of a barren field. There are a series of on-site drainage inlets that connect to a small on-site storm drain system and eventually connect to the existing catch basin on Remington (at the corner of Remington and Roosevelt). From there it flows in a mainline RCP storm drain in Roosevelt that ranges from 24" to 48". This pipeline eventually outlets into Central Irvine Channel, then Peters Canyon Channel, into San Diego Creek and then into Newport Bay. Part of the project is a Parcel Map to subdivide the existing parcel into 2 separate pieces. The existing and proposed drainage patterns can be

	found in Attachment E hydrology maps. The majority of what will be the residential property flows to the same location, the catch basin at the corner of Roosevelt and Remington, in both the existing and proposed condition. There is a portion in the east in the existing condition that flows to the residential portion. For this reason the existing and proposed drainage areas are not exactly the same.
<i>Soil Type, Geology, and Infiltration Properties</i>	The soil is primarily clayey sand, silty sand and sandy clay. The site is underlain by Young Alluvial Fan Deposits (Qyf).
<i>Hydrogeologic (Groundwater) Conditions</i>	Groundwater was found at approximately 54' deep. Historic high groundwater is estimated at greater than 40'.
<i>Geotechnical Conditions (relevant to infiltration)</i>	Infiltration testing produced rates of 0.01 and 0.02 inches/hour without a factor of safety. Therefore, infiltration is not feasible. (See report in Attachment D)
<i>Off-Site Drainage</i>	N/A
<i>Utility and Infrastructure Information</i>	Sewer & water are served by IRWD. Public storm drain in the adjacent roadways is owned and maintained by the City of Irvine.

III.3 Watershed Description

Receiving Waters	Peters Canyon Channel San Diego Creek Newport Bay
303(d) Listed Impairments	San Diego Creek Reach 1 (Benthic Community Effects, DDT, Indicator Bacteria, Malathion, Nutrients, Sedimentation/Siltation, Selenium, Toxaphene, Toxicity) Newport Bay Upper (Chlordane, Copper, DDT, Indicator Bacteria, Malathion, Nutrients, PCBs, Sedimentation/Siltation, Toxicity) Newport Bay Lower (Chlordane, Copper, DDT, Indicator Bacteria, Nutrients, PBCs, Toxicity)
Applicable TMDLs	All waterbodies listed above are requirement status: Category 5A - a TMDL is required, but not yet completed Category 5B - being addressed by USEPA approved TMDL
Pollutants of Concern for the Project	Suspended-Solid/ Sediment Nutrients Pesticides Oil and Grease Toxic Organic Compounds Trash and Debris
Environmentally Sensitive and Special Biological Significant Areas	N/A

Section IV Best Management Practices (BMPs)

IV. 1 Project Performance Criteria

(NOC Permit Area only) Is there an approved WIHMP or equivalent for the project area that includes more stringent LID feasibility criteria or if there are opportunities identified for implementing LID on regional or sub-regional basis?		YES ☐	NO ☒
If yes, describe WIHMP feasibility criteria or regional/sub-regional LID opportunities.	N/A		

Project Performance Criteria (continued)

If HCOC exists, list applicable hydromodification control performance criteria (Section 7.II-2.4.2.2 in MWQMP)	• Post-development runoff volume for the two-year frequency storm does not exceed that of the predevelopment condition by more than five percent • Time of concentration of post-development runoff for the two-year storm event is not less than that for the predevelopment condition by more than five percent
List applicable LID performance criteria (Section 7.II-2.4.3 from MWQMP)	• Priority Projects must infiltrate, harvest and use, evapotranspire, or biotreat/biofilter, the 85th percentile, 24-hour storm event (Design Capture Volume). • A properly designed biotreatment system may only be considered if infiltration, harvest and use, and evapotranspiration (ET) cannot be feasibly implemented for the full design capture volume. In this case, infiltration, harvest and use, and ET practices must be implemented to the greatest extent feasible and biotreatment may be provided for the remaining design capture volume.
List applicable treatment control BMP performance criteria (Section 7.II-3.2.2 from MWQMP)	• If it is not feasible to meet LID performance criteria through retention and/or biotreatment provided on-site or at a sub-regional/regional scale, then treatment control BMPs shall be provided on-site or offsite prior to discharge to waters of the US. Sizing of treatment control BMP(s) shall be based on either the unmet volume after claiming applicable water quality credits, if appropriate (See Section 7.II-3.1 Water Quality Credits) and as calculated in TGD Appendix VI. If treatment control BMPs can treat all of the remaining unmet volume and have a medium to high effectiveness for reducing the primary POCs, the project is considered to be in compliance; a waiver application and participation in an alternative program is not required. • If the cost of providing treatment control BMPs greatly outweighs the pollution control benefits they would provide, a waiver of treatment control and LID requirements can be requested and alternative compliance approaches must be used to fulfill the remaining unmet volume.

Calculate LID design storm capture volume for Project.	<u>LID Design Storm Capture Volume (DCV)</u> Defined as: $V = C \times d \times A \times 43,560 \text{ sf/ac} \times 1/12 \text{ in/ft}$ Where: V = runoff volume during the design storm event, cu-ft C = runoff coefficient = $(0.75 \times \text{imp} + 0.15)$ imp = impervious fraction of drainage area (ranges from 0 to 1) d = storm depth (inches) A = tributary area (acres) The Design Capture Volume for the project is as follows: 85th percentile, 24-hr storm depth = d = 0.80 inches Drainage Area = A = 2.92 acres Imperviousness = imp = 0.84 $V = 2.92 \text{ ac} \times 0.80 \text{ inches} \times ((0.75 \times 0.84) + 0.15) \times 43,560 \text{ sf/ac} \times 1/12 \text{ in/ft}$ $V = 6,614 \text{ cu-ft}$ <i>Note: Volume calculated is for reference only, LID BMP solution will be a flow based proprietary biotreatment solution. See Attachment B for calculations.</i>
--	--

IV.2. SITE DESIGN AND DRAINAGE PLAN

Where feasible, impervious area dispersion was utilized to allow for evapotranspiration and incidental infiltration of runoff, prior to discharging to the storm drain system.

Infiltration was considered as a BMP for the development but due to low measured rates the project is infeasible for infiltration per the Geotechnical Report in Attachment D

Rainwater harvesting and re-use was considered as a BMP. The total landscape area does not require enough demand to justify the use of harvesting BMPs. See Worksheet J in Attachment B.

Therefore, bio-treatment was selected as the proposed BMP to meet LID performance criteria. Runoff from the project will be collected and treated by modular wetland systems. Bio treatment unit details are included in Attachment C.

The entire site was treated as one drainage management area. One unit at the downstream end will treat the required flows and the peak flows will bypass the water quality treatment system. The WQMP site showing the BMP location and overall drainage pattern can be found in Attachment A.

DMA 1:

A=2.9 acres

Imp=0.84

C=0.78

Qdesign=0.52cfs

IV.3 LID BMP SELECTION AND PROJECT CONFORMANCE ANALYSIS

IV.3.1 Hydrologic Source Controls

Name	Included?
Localized on-lot infiltration	☐
Impervious area dispersion (e.g. roof top disconnection)	☐
Street trees (canopy interception)	☒
Residential rain barrels (not actively managed)	☐
Green roofs/Brown roofs	☐
Blue roofs	☐
Impervious area reduction (e.g. permeable pavers, site design)	☒
Other:	☐

HSC-3 Street Trees

Trees will be planted within the parking lot and central plaza area. These trees will intercept and provide some volume reduction benefits for the project.

Impervious Area Reduction

The central church plaza area will incorporate as much landscape and pervious area as possible to provide aesthetic and water quality benefits.

NOTE: DCV reduction credit has not been determined for these areas as their benefits are incidental and the areas not specifically designed to retain runoff.

IV.3.2 Infiltration BMPs

Name	Included?
Bioretention without underdrains	☐
Rain gardens	☐
Porous landscaping	☐
Infiltration planters	☐
Retention swales	☐
Infiltration trenches	☐
Infiltration basins	☐
Drywells	☐
Subsurface infiltration galleries	☐
French drains	☐
Permeable asphalt	☐
Permeable concrete	☐
Permeable concrete pavers	☐
Other:	☐
Other:	☐

Per the Geotech report in Attachment D infiltration testing produced rates of 0.01 and 0.02 inches/hour without a factor of safety. Therefore, infiltration is not feasible.

IV.3.3 Evapotranspiration, Rainwater Harvesting BMPs

Name	Included?
All HSCs; <i>See Section IV.3.1</i>	☐
Surface-based infiltration BMPs	☐
Biotreatment BMPs	☐
Above-ground cisterns and basins	☐
Underground detention	☐
Other:	☐
Other:	☐
Other:	☐

Due to the small landscape area onsite harvest and re-use is not practical or economical. Refer to Worksheet J in Attachment B.

IV.3.4 Biotreatment BMPs

Name	Included?
Bioretention with underdrains	☐
Stormwater planter boxes with underdrains	☐
Rain gardens with underdrains	☐
Constructed wetlands	☐
Vegetated swales	☐
Vegetated filter strips	☐
Proprietary vegetated biotreatment systems	☒
Wet extended detention basin	☐
Dry extended detention basins	☐
Other:	☐
Other:	☐

The LID DCV criteria will be met by using a flow-based biotreatment BMP solution. One unit will treat the whole site's required flows. Peak flows will bypass the water quality system. See Attachment B for calculations and Attachment C for system details.

IV.3.5 Hydromodification Control BMPs

BMP Name	BMP Description
Oversized storm drain pipes	In order to mitigate the peak flow differential from the proposed condition down to the existing condition storm drain pipelines will be oversized. The additional pipe volume will serve as a detention system and an orifice/weir structure will be installed to outlet flows at a rate similar to the existing condition.

IV.3.8 Non-structural Source Control BMPs

Fill out non-structural source control check box forms or provide a brief narrative explaining if non-structural source controls were not used.

Non-Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
N1	Education for Property Owners, Tenants and Occupants	☒	☐	
N2	Activity Restrictions	☒	☐	
N3	Common Area Landscape Management	☒	☐	
N4	BMP Maintenance	☒	☐	
N5	Title 22 CCR Compliance (How development will comply)	☒	☒	Not required for residential
N6	Local Industrial Permit Compliance	☐	☒	Not an industrial project
N7	Spill Contingency Plan	☐	☒	No proposed hazardous materials onsite
N8	Underground Storage Tank Compliance	☐	☒	No underground storage
N9	Hazardous Materials Disclosure Compliance	☐	☒	No hazardous material onsite
N10	Uniform Fire Code Implementation	☐	☒	Proposed facility does not propose to store toxic or highly toxic compressed gas.
N11	Common Area Litter Control	☒	☐	
N12	Employee Training	☒	☐	
N13	Housekeeping of Loading Docks	☐	☒	No loading docks
N14	Common Area Catch Basin Inspection	☒	☐	
N15	Street Sweeping Private Streets and Parking Lots	☒	☐	
N16	Retail Gasoline Outlets	☐	☒	No retail gas

IV.3.9 Structural Source Control BMPs

Fill out structural source control check box forms or provide a brief narrative explaining if Structural source controls were not used.

Structural Source Control BMPs				
Identifier	Name	Check One		If not applicable, state brief reason
		Included	Not Applicable	
S1	Provide storm drain system stenciling and signage	☒	☐	
S2	Design and construct outdoor material storage areas to reduce pollution introduction	☐	☒	No storage areas proposed
S3	Design and construct trash and waste storage areas to reduce pollution introduction	☒	☐	
S4	Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	☒	☐	
S5	Protect slopes and channels and provide energy dissipation	☐	☒	No slopes/channels
	Incorporate requirements applicable to individual priority project categories (from SDRWQCB NPDES Permit)	☐	☒	Santa Ana Region
S6	Dock areas	☐	☒	No docks
S7	Maintenance bays	☐	☒	No bays
S8	Vehicle wash areas	☐	☒	No wash areas
S9	Outdoor processing areas	☐	☒	No outdoor processing
S10	Equipment wash areas	☐	☒	No wash areas
S11	Fueling areas	☐	☒	No fueling areas
S12	Hillside landscaping	☐	☒	No hillsides
S13	Wash water control for food preparation areas	☐	☒	No food prep
S14	Community car wash racks	☐	☒	No car washes

IV.4 ALTERNATIVE COMPLIANCE PLAN (IF APPLICABLE)

IV.4.1 Water Quality Credits

Determine if water quality credits are applicable for the project. *Refer to Section 3.1 of the Model WQMP for description of credits and Appendix VI of the TGD for calculation methods for applying water quality credits.*

Description of Proposed Project				
Project Types that Qualify for Water Quality Credits (Select all that apply):				
☐ Redevelopment projects that reduce the overall impervious footprint of the project site.	☐ Brownfield redevelopment, meaning redevelopment, expansion, or reuse of real property which may be complicated by the presence or potential presence of hazardous substances, pollutants or contaminants, and which have the potential to contribute to adverse ground or surface WQ if not redeveloped.		☐ Higher density development projects which include two distinct categories (credits can only be taken for one category): those with more than seven units per acre of development (lower credit allowance); vertical density developments, for example, those with a Floor to Area Ratio (FAR) of 2 or those having more than 18 units per acre (greater credit allowance).	
☐ Mixed use development, such as a combination of residential, commercial, industrial, office, institutional, or other land uses which incorporate design principles that can demonstrate environmental benefits that would not be realized through single use projects (e.g. reduced vehicle trip traffic with the potential to reduce sources of water or air pollution).	☐ Transit-oriented developments, such as a mixed use residential or commercial area designed to maximize access to public transportation; similar to above criterion, but where the development center is within one half mile of a mass transit center (e.g. bus, rail, light rail or commuter train station). Such projects would not be able to take credit for both categories, but may have greater credit assigned		☐ Redevelopment projects in an established historic district, historic preservation area, or similar significant city area including core City Center areas (to be defined through mapping).	
☐ Developments with dedication of undeveloped portions to parks, preservation areas and other pervious uses.	☐ Developments in a city center area.	☐ Developments in historic districts or historic preservation areas.	☐ Live-work developments, a variety of developments designed to support residential and vocational needs together – similar to criteria to mixed use development; would not be able to take credit for both categories.	☐ In-fill projects, the conversion of empty lots and other underused spaces into more beneficially used spaces, such as residential or commercial areas.
Calculation of Water Quality Credits (if applicable)	N/A			

IV.4.2 Alternative Compliance Plan Information

Describe an alternative compliance plan (if applicable). Include alternative compliance obligations (i.e., gallons, pounds) and describe proposed alternative compliance measures. *Refer to Section 7.II 3.0 in the WQMP.*

N/A

Section V Inspection/Maintenance Responsibility for BMPs

Fill out information in table below. Prepare and attach an Operation and Maintenance Plan. Identify the mechanism through which BMPs will be maintained. Inspection and maintenance records must be kept for a minimum of five years for inspection by the regulatory agencies. *Refer to Section 7.II 4.0 in the Model WQMP.*

BMP INSPECTION/MAINTENANCE			
BMP	Responsible Party(s)	Inspection/Maintenance Activities Required	Minimum Frequency of Activities
HYDROLOGIC SOURCE CONTROL BMPs			
HSC-3 Street Trees	Owner	Conduct general inspection and maintenance monthly per routine landscaping maintenance activities. Trim trees as needed. Conduct bi-annual tree health evaluations.	After significant storm events and monthly with landscaping maintenance
BIOTREATMENT BMPs			
Proprietary Biotreatment	Owner	Comply with "Operations & Maintenance" by manufacturer. Attached with Final WQMP.	Before and after major storm events.
		Inspect unit for accumulated debris and sediment and plant health; remove trash; trim vegetation. Scarify media to promote infiltration. Add additional mulch	
		Replace 3" to 6" of media layer.	10 years
NON-STRUCTURAL SOURCE CONTROL BMPs			
N1 Education for Property Owners, Tenants and Occupants	Owner	Educational materials will be provided to the owner. Materials shall include those shown in Section VII of this WQMP.	At project completion
N2 Activity Restrictions	Owner	Owner will follow activity restrictions to protect surface water quality.	Ongoing

Water Quality Management Plan (WQMP)
Our Lady of Peace - Residential

N3 Common Area Landscape Management	Owner	Maintenance shall be consistent with City requirements; any fertilizer and/or pesticide usages shall be consistent with City and manufacturer guidelines for use of fertilizers and pesticides. Maintenance includes mowing, weeding, and debris removal. Trimming, replanting and replacement of mulch shall be performed on an as-needed basis. Trimmings, clippings, and other waste shall be properly disposed of off-site in accordance with local regulations. Materials temporarily stockpiled during maintenance activities shall be placed away from water courses and drain inlets.	Monthly and as needed
N4 BMP Maintenance	Owner	Maintenance of BMPs implemented at the project site shall be performed at the frequency prescribed in this WQMP. Records of inspections and BMP maintenance shall be maintained by the City and documented with the WQMP.	Ongoing
N11 Common Area Litter control	Owner	Litter patrol, violations investigation, reporting and other litter control activities shall be performed by the owner as needed and in conjunction with maintenance activities for common areas.	Ongoing
N12 Employee Training	Owner	Owner will train all current and new employees on maintenance procedures for all site BMPs	Ongoing
N14 Common Area Catch Basin Inspection	Owner	Catch basin inlets, area drains, curb-and-gutter systems and other drainage systems shall be inspected prior to October 1st of each year and after large storm events. If necessary, drains shall be cleaned prior to any succeeding rain events. 80% of private facilities shall be inspected and cleaned annually, with 100% of facilities inspected and maintained within a 2-year period.	Annually
N15 Street Sweeping	Owner	Parking lots and drive aisles will be swept and kept clear of debris.	Monthly

STRUCTURAL SOURCE CONTROL BMPs			
S1 Provide storm drain system stencilling and signage	Owner	As a part of the final civil engineering drawings, it will be required by the owner to stencil on all of the project's catch basins, where applicable in paved areas, the words, "No Dumping - Drains to Ocean." Storm drain stencils shall be inspected for legibility, at minimum, once prior to the storm season, no later than October 1st each year. Those determined to be illegible will be re-stencilled as soon as possible.	Annually
S3 - Trash & Waste Storage Areas	Owner	Trash areas shall be inspected to insure no leaks or spills from the trash containers. Drop inlet will be inspected and filters cleaned out.	Monthly/Quarterly (before/after major rain events)
S4 Use efficient irrigation systems & landscape design, water conservation, smart controllers, and source control	Owner	In conjunction with routine maintenance activities, verify that landscape design continues to function properly by adjusting properly to eliminate overspray to hardscape areas, and to verify that irrigation timing and cycle lengths are adjusted in accordance with water demands, given time of year, weather, day or night time temperatures based on system specifications and local climate patterns.	Monthly

Section VI Site Plan and Drainage Plan

VI.1 SITE PLAN AND DRAINAGE PLAN

See Attachment A.

Include a site plan and drainage plan sheet set containing the following minimum information:

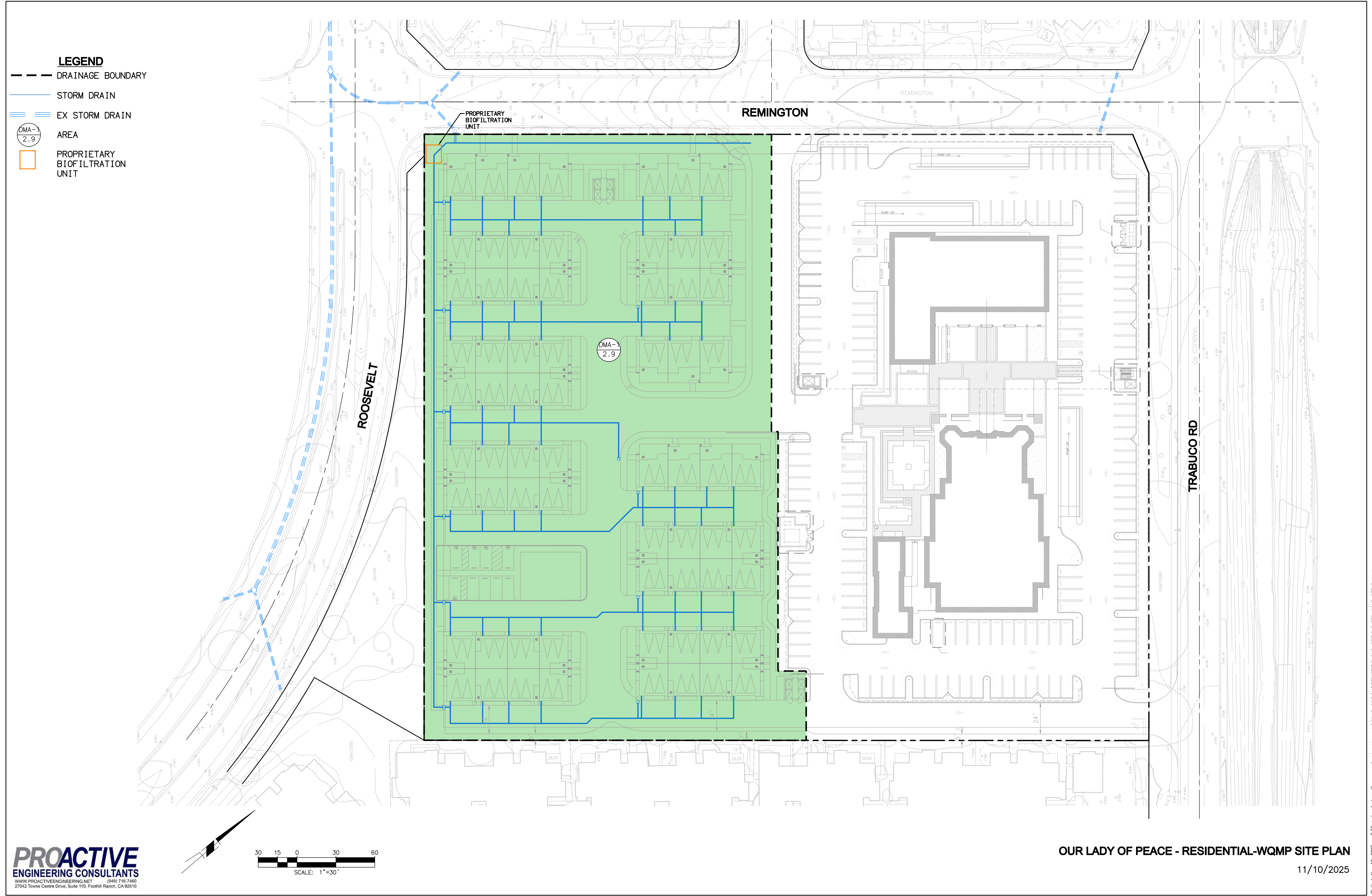
- Project location
- Site boundary
- Land uses and land covers, as applicable
- Suitability/feasibility constraints
- Structural BMP locations
- Drainage delineations and flow information
- Drainage connections
- BMP details

Section VII Educational Materials

Refer to the Orange County Stormwater Program (ocwatersheds.com) for a library of materials available. For the copy submitted to the Permittee, only attach the educational materials specifically applicable to the project. Other materials specific to the project may be included as well and must be attached.

Education Materials			
Residential Material (http://www.ocwatersheds.com)	Check If Applicable	Business Material (http://www.ocwatersheds.com)	Check If Applicable
The Ocean Begins at Your Front Door	☒	Tips for the Automotive Industry	☐
Tips for Car Wash Fund-raisers	☐	Tips for Using Concrete and Mortar	☐
Tips for the Home Mechanic	☐	Tips for the Food Service Industry	☐
Homeowners Guide for Sustainable Water Use	☒	Proper Maintenance Practices for Your Business	☐
Household Tips	☐	Other Material	Check If Attached
Proper Disposal of Household Hazardous Waste	☒		
Recycle at Your Local Used Oil Collection Center (North County)	☐		☐
Recycle at Your Local Used Oil Collection Center (Central County)	☒		☐
Recycle at Your Local Used Oil Collection Center (South County)	☐		☐
Tips for Maintaining a Septic Tank System	☐		☐
Responsible Pest Control	☐		☐
Sewer Spill	☐		☐
Tips for the Home Improvement Projects	☒		☐
Tips for Horse Care	☐		☐
Tips for Landscaping and Gardening	☐		☐
Tips for Pet Care	☐		☐
Tips for Pool Maintenance	☐		☐
Tips for Residential Pool, Landscape and Hardscape Drains	☐		☐
Tips for Projects Using Paint	☒		☐

Attachment A: Site Plan



- LEGEND**
- DRAINAGE BOUNDARY
 - STORM DRAIN
 - == EX STORM DRAIN
 - DMA-1 2.9 AREA
 - PROPRIETARY BIOFILTRATION UNIT

Attachment B: Worksheets and Calculations

Worksheet D: Capture Efficiency Method for Flow-Based BMPs

Step 1: Determine the design capture storm depth used for calculating volume												
1	Enter the time of concentration, T_c (min) (See Appendix IV.2)	$T_c =$	8.28									
2	Using Figure III.4 , determine the design intensity at which the estimated time of concentration (T_c) achieves 80% capture efficiency, I_1	$I_1 =$	0.23	in/hr								
3	Enter the effect depth of provided HSCs upstream, d_{HSC} (inches) (Worksheet A)	$d_{HSC} =$	0	inches								
4	Enter capture efficiency corresponding to d_{HSC} , Y_2 (Worksheet A)	$Y_2 =$	0	%								
5	Using Figure III.4 , determine the design intensity at which the time of concentration (T_c) achieves the upstream capture efficiency(Y_2), I_2	$I_2 =$	0									
6	Determine the design intensity that must be provided by BMP, $I_{design} = I_1 - I_2$	$I_{design} =$	0.23									
Step 2: Calculate the design flowrate												
1	Enter Project area tributary to BMP (s), A (acres)	$A =$	2.9	acres								
2	Enter Project Imperviousness, imp (unitless)	$imp =$	0.84									
3	Calculate runoff coefficient, $C = (0.75 \times imp) + 0.15$	$C =$	0.78									
4	Calculate design flowrate, $Q_{design} = (C \times I_{design} \times A)$	$Q_{design} =$	0.52	cfs								
Supporting Calculations $0.78 \times 0.23 \text{ in/hr} \times 2.9 \text{ ac} \times 43,560 \text{ sqft/ac} \times 1 \text{ hr}/60 \text{ min} \times 1 \text{ min}/60 \text{ sec} \times 1 \text{ ft}/12 \text{ in} = 0.52 \text{ cfs}$												
Describe system:												
<table border="1"> <thead> <tr> <th>MODEL #</th> <th>DIMENSIONS</th> <th>WETLAND MEDIA SURFACE AREA (sq. ft.)</th> <th>TREATMENT FLOW RATE (cfs)</th> </tr> </thead> <tbody> <tr> <td>MWS-L-8-20</td> <td>9' x 21'</td> <td>252</td> <td>0.577</td> </tr> </tbody> </table>					MODEL #	DIMENSIONS	WETLAND MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)	MWS-L-8-20	9' x 21'	252	0.577
MODEL #	DIMENSIONS	WETLAND MEDIA SURFACE AREA (sq. ft.)	TREATMENT FLOW RATE (cfs)									
MWS-L-8-20	9' x 21'	252	0.577									
Provide time of concentration assumptions:												
<pre> ===== END OF STUDY SUMMARY: TOTAL AREA(ACRES) = 2.7 TC(MIN.) = 8.28 EFFECTIVE AREA(ACRES) = 2.71 AREA-AVERAGED Fm(INCH/HR)= 0.05 AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.200 PEAK FLOW RATE(CFS) = 4.05 ===== END OF RATIONAL METHOD ANALYSIS </pre>												

Figure III.4. Capture Efficiency Nomograph for Off-line Flow-based Systems in Orange County

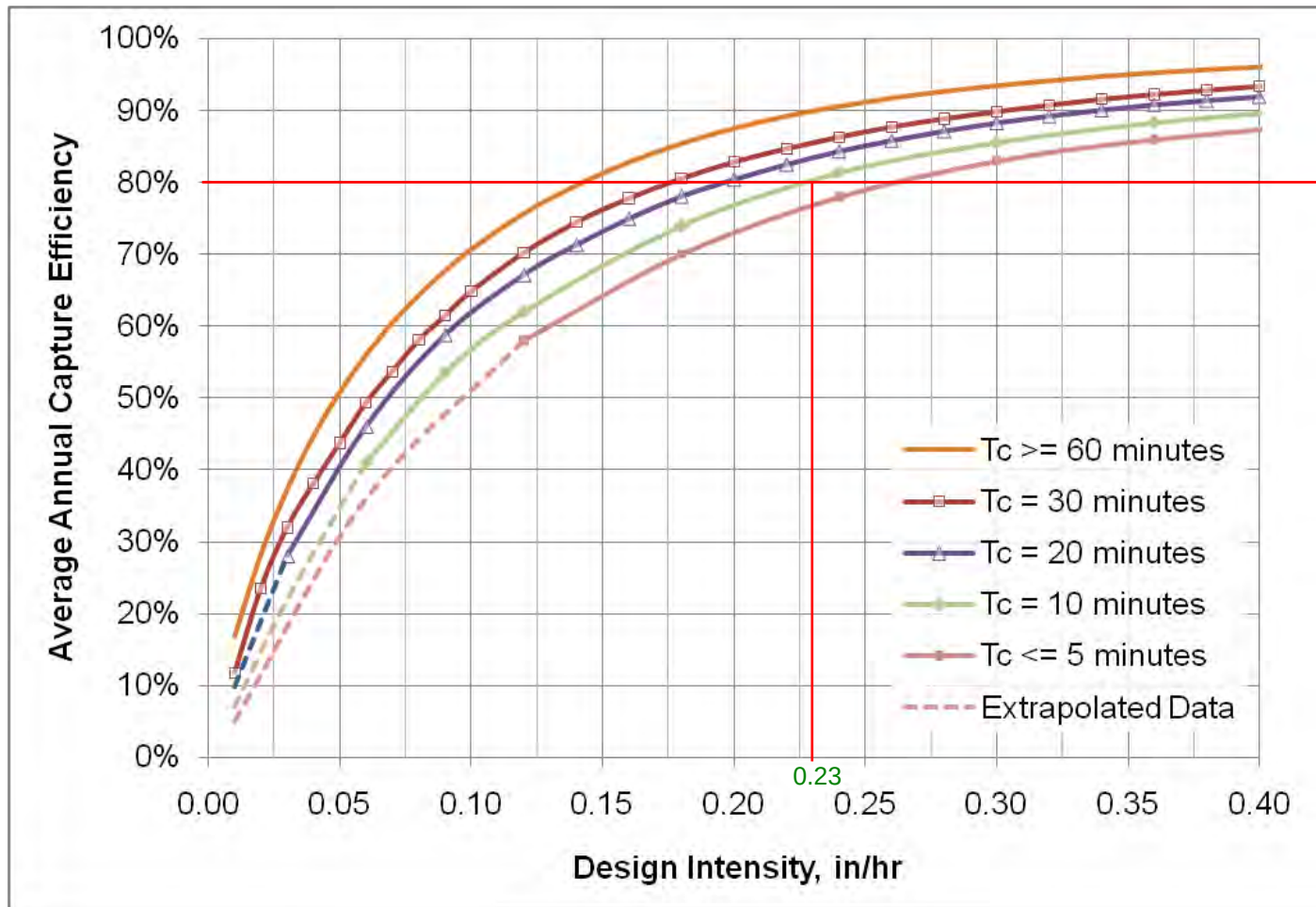


Table X.8: Minimum Irrigated Area for Potential Partial Capture Feasibility

General Landscape Type	Conservation Design: $K_L = 0.35$			Active Turf Areas: $K_L = 0.7$		
<i>Closest ET Station</i>	<i>Irvine</i>	<i>Santa Ana</i>	<i>Laguna</i>	<i>Irvine</i>	<i>Santa Ana</i>	<i>Laguna</i>
Design Capture Storm Depth, inches	Minimum Required Irrigated Area per Tributary Impervious Acre for Potential Partial Capture, ac/ac					
0.60	0.66	0.68	0.72	0.33	0.34	0.36
0.65	0.72	0.73	0.78	0.36	0.37	0.39
0.70	0.77	0.79	0.84	0.39	0.39	0.42
0.75	0.83	0.84	0.90	0.41	0.42	0.45
0.80	0.88	0.90	0.96	0.44	0.45	0.48
0.85	0.93	0.95	1.02	0.47	0.48	0.51
0.90	0.99	1.01	1.08	0.49	0.51	0.54
0.95	1.04	1.07	1.14	0.52	0.53	0.57
1.00	1.10	1.12	1.20	0.55	0.56	0.60

Worksheet J: Summary of Harvested Water Demand and Feasibility

1	What demands for harvested water exist in the tributary area (check all that apply):			
2	Toilet and urinal flushing		☒	
3	Landscape irrigation		☒	
4	Other: _____		☐	
5	What is the design capture storm depth? (Figure III.1)	d	0.8	inches
6	What is the project size?	A	2.92	ac
7	What is the acreage of impervious area?	IA	2.23	ac
For projects with multiple types of demand (toilet flushing, indoor demand, and/or other demand)				
8	What is the minimum use required for partial capture? (Table X.6)		650	gpd
9	What is the project estimated wet season total daily use?		Very low considering small landscape areas	gpd
10	Is partial capture potentially feasible? (Line 9 > Line 8?)		No	
For projects with only toilet flushing demand				
11	What is the minimum TUTIA for partial capture? (Table X.7)			
12	What is the project estimated TUTIA?			

Worksheet J: Summary of Harvested Water Demand and Feasibility

13	Is partial capture potentially feasible? (Line 12 > Line 11?)		
For projects with only irrigation demand			
14	What is the minimum irrigation area required based on conservation landscape design? (Table X.8)		ac
15	What is the proposed project irrigated area? (multiply conservation landscaping by 1; multiply active turf by 2)		ac
16	Is partial capture potentially feasible? (Line 15 > Line 14?)		
Provide supporting assumptions and citations for controlling demand calculation:			

Table X.6: Harvested Water Demand Thresholds for Minimum Partial Capture

Design Capture Storm Depth ¹ , inches	Wet Season Demand Required for Minimum Partial Capture ² , gpd per impervious acre
0.60	490
0.65	530
0.70	570
0.75	610
0.80	650
0.85	690
0.90	730
0.95	770
1.00	810

1 - Based on isopluvial map (See [XVI.1](#))

2 -Minimum Partial Capture is a performance standard whereby system performance exceeds 40 percent capture (See [Appendix XIII](#)) , such that the system must be considered for use even if it cannot achieve the full DCV.

Attachment C: BMP Fact Sheets & Details

BIO-5/BIO-7: PROPRIETARY BIOTREATMENT

Category: Biotreatment with Partial Infiltration (when accompanied by supplemental retention)

Biotreatment with No Infiltration (when used without supplemental retention)

Proprietary biotreatment BMPs are proprietary devices that are manufactured to treat stormwater. **Acceptance criteria for proprietary biotreatment BMPs are defined in [Appendix J](#).** Proprietary BMPs that do not meet these acceptance criteria are not permitted. In addition, proprietary biotreatment BMPs must meet the definition of biofiltration in order to be used as LID biotreatment BMPs. There are two configurations of proprietary biotreatment, as explained in the following subsections.

BIO-5: Proprietary Biotreatment with Enhanced Retention Configuration

As standalone systems, proprietary biotreatment BMPs typically provide negligible volume reduction. To be used as a “biotreatment BMP with partial infiltration,” these BMPs must be accompanied by a retention compartment. This could consist of several options:

- Permeable pavement upstream of the proprietary BMP
- Shallow infiltration gallery or chambers downstream of the BMP, connected to underdrains.
- Proprietary biotreatment downstream of a cistern for harvest and use.
- Use of adequate hydrologic source controls in the watershed to meet volume reduction targets (see Sizing section of this Fact Sheet).
- Other configurations that are determined to be appropriate to maximize the feasible volume reduction for the DMA.

Guidance for retention compartments is provided in other fact sheets, such as INF-5 (Permeable Pavement) and INF-6 (Underground Infiltration).

BIO-7: Standard Configuration without Supplemental Retention

For conditions that do not require partial infiltration, volume retention is not a performance goal. Acceptable proprietary biotreatment BMPs may be used as standalone systems. Guidance related to complementary retention can be disregarded.

Pollutant Removal Considerations

BMPs that meet the acceptance criteria in [Appendix J](#) are considered to provide adequate treatment for pollutants of concern. According to these criteria, there are different levels of treatment certification needed for different pollutants of concern.

Recommended Design Criteria and Considerations

Design Criteria	Intent/Rationale
☐ Sediment sources should be controlled prior to operation of the system.	Proprietary systems are susceptible to clogging similar to other BMPs. Systems should not be used in areas that will continue to receive elevated sediment loading following construction, such as from open space area.
☐ When accompanied by infiltration compartments, the ponding should not be higher than the underdrain elevation of the proprietary BMP.	This is intended to ensure that the complementary retention compartment does not reduce the hydraulic capacity of the proprietary biotreatment BMP.
☐ When accompanied by infiltration compartments, these infiltration BMPs must adhere to siting guidance found in the respective fact sheet for the BMP	Specific siting considerations apply to infiltration BMPs.
☐ Proprietary biotreatment systems typically do not require separate pretreatment	These BMPs typically include integrated mechanisms for pretreatment.
☐ Proprietary BMPs must be designed in a manner consistent with manufacturer recommendations and consistent with the design configuration that was tested as part of the BMP certification	Proprietary devices have device-specific design, installation, and maintenance details which must be followed for proper treatment results.
☐ In right of way areas, plant selection should not impair traffic sightlines or vehicle access.	Vegetation must not be prohibitive for typical vehicular movement and parking access needs.
☐ Manufacturer guidance on vegetation selection and establishment should be followed	Manufacturers have experience with plant survival in specific climates for the BMP-specific conditions.

Calculations and Sizing Method

Proprietary Biotreatment BMPs are flow-based BMPs. See [Appendix E](#) for acceptable sizing methods.

Supplemental retention elements (for [BIO-5](#) configuration) should be sized for one of the following targets, where possible:

- Approximately 40 percent long term volume reduction.
- Retention storage provided for approximately one-third of the DCV.
- Infiltration footprint (collective of all infiltrating elements of the project design) meeting target defined in [Section E.4.2](#).

Construction Guidance

Construction Guidance	Intent/Rationale
☐ Plans should include a construction sequence for the BMP. Revisions proposed by the contractor should be reviewed by the engineer. The construction sequence should address erosion control, utilities, BMP installation, inspections, testing and certifications, vegetation, stabilization, and post-construction monitoring.	Construction sequencing is critical to avoid issues/damage and allow appropriate inspections, testing, and certifications to be performed.
☐ Provide for inspection of buried infrastructure (e.g., underdrain, filter course) before it is buried.	It is impractical to inspect buried elements once they are covered.
☐ Fully stabilize sources of sediment within the tributary area (i.e., no exposed soil) prior to placing the finished BMP into service.	Sediment loading can seriously impair the capacity of the BMP.
☐ Allow plants and mulch to stabilize for as long as practicable (preferably several months) prior to placing the finished BMP into service.	Stabilization of the system allows plants to mature before stressing the system with stormwater loading.

O&M Activities and Frequencies

Activity	Frequency
GENERAL INSPECTIONS	
Remove trash and debris	Four times per year during wet season, including inspection just before the wet season and within 24 hours after at least two storm events ≥ 0.5 inches.
Identify excess erosion or scour	
Identify sediment accumulation that requires maintenance	
Inspect during storm event, when possible, to estimate treatment capacity and determine if premature bypass is occurring	
Evaluate plant health and need for corrective action	
Identify any needed corrective maintenance that will require site-specific planning or design	
OPERATION AND MAINTENANCE	
- O&M of proprietary BMPs must follow established manufacturer guidelines - O&M of accompanying retention BMPs should follow the guidelines established in the associated fact sheet for that BMP.	



A Forterra Company

Modular Wetlands[®] System Linear

A Stormwater Biofiltration Solution



OVERVIEW

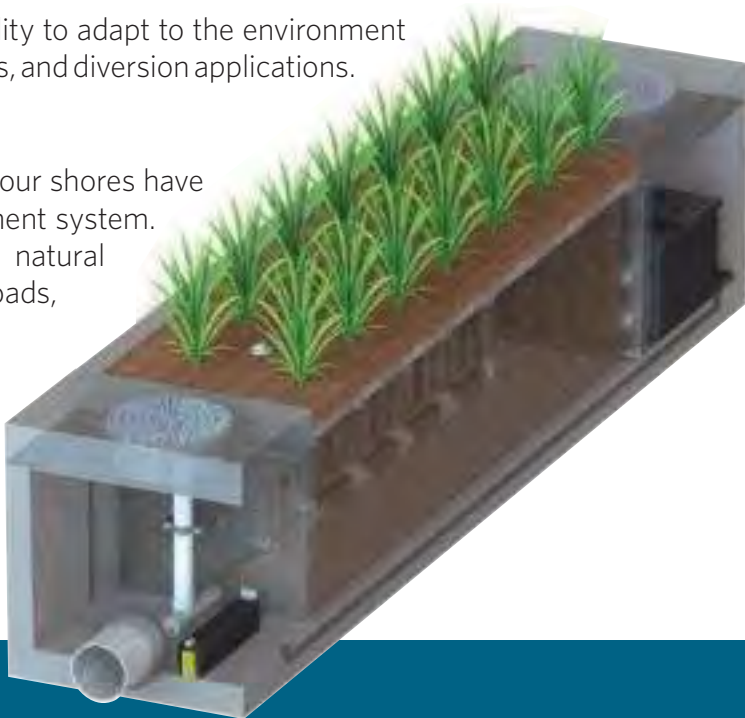
The Bio Clean Modular Wetlands® System Linear represents a pioneering breakthrough in stormwater technology as the only biofiltration system to utilize patented horizontal flow, allowing for a smaller footprint, higher treatment capacity, and a wide range of versatility. While most biofilters use little or no pretreatment, the Modular Wetlands® incorporates an advanced pretreatment chamber that includes separation and pre-filter cartridges. In this chamber, sediment and hydrocarbons are removed from runoff before entering the biofiltration chamber, reducing maintenance costs and improving performance.

Horizontal flow also gives the system the unique ability to adapt to the environment through a variety of configurations, bypass orientations, and diversion applications.

The Urban Impact

For hundreds of years, natural wetlands surrounding our shores have played an integral role as nature’s stormwater treatment system. But as cities grow and develop, our environment’s natural filtration systems are blanketed with impervious roads, rooftops, and parking lots.

Bio Clean understands this loss and has spent years re-establishing nature’s presence in urban areas, and rejuvenating waterways with the Modular Wetlands® System Linear.



PERFORMANCE

The Modular Wetlands® continues to outperform other treatment methods with superior pollutant removal for TSS, heavy metals, nutrients, hydrocarbons, and bacteria. Since 2007 the Modular Wetlands® has been field tested on numerous sites across the country and is proven to effectively remove pollutants through a combination of physical, chemical, and biological filtration processes. In fact, the Modular Wetlands® harnesses some of the same biological processes found in natural wetlands in order to collect, transform, and remove even the most harmful pollutants.

66% REMOVAL OF DISSOLVED ZINC	69% REMOVAL OF TOTAL ZINC	38% REMOVAL OF DISSOLVED COPPER	64% REMOVAL OF TOTAL PHOSPHORUS	
45% REMOVAL OF NITROGEN	50% REMOVAL OF TOTAL COPPER	95% REMOVAL OF MOTOR OIL	67% REMOVAL OF ORTHO PHOSPHORUS	85% REMOVAL OF TSS

APPROVALS

The Modular Wetlands® System Linear has successfully met years of challenging technical reviews and testing from some of the most prestigious and demanding agencies in the nation and perhaps the world. Here is a list of some of the most high-profile approvals, certifications, and verifications from around the country.



Washington State Department of Ecology TAPE Approved

The MWS Linear is approved for General Use Level Designation (GULD) for Basic, Enhanced, and Phosphorus treatment at 1 gpm/ft² loading rate. The highest performing BMP on the market for all main pollutant categories.



California Water Resources Control Board, Full Capture Certification

The Modular Wetlands® System is the first biofiltration system to receive certification as a full capture trash treatment control device.



Virginia Department of Environmental Quality, Assignment

The Virginia Department of Environmental Quality assigned the MWS Linear the highest phosphorus removal rating for manufactured treatment devices to meet the new Virginia Stormwater Management Program (VSMP) regulation technical criteria.



Maryland Department of the Environment, Approved ESD

Granted Environmental Site Design (ESD) status for new construction, redevelopment, and retrofitting when designed in accordance with the design manual.



MASTEP Evaluation

The University of Massachusetts at Amherst – Water Resources Research Center issued a technical evaluation report noting removal rates up to 84% TSS, 70% total phosphorus, 68.5% total zinc, and more.



Rhode Island Department of Environmental Management, Approved BMP

Approved as an authorized BMP and noted to achieve the following minimum removal efficiencies: 85% TSS, 60% pathogens, 30% total phosphorus, and 30% total nitrogen.

ADVANTAGES

- HORIZONTAL FLOW BIOFILTRATION
- GREATER FILTER SURFACE AREA
- PRETREATMENT CHAMBER
- PATENTED PERIMETER VOID AREA
- FLOW CONTROL
- NO DEPRESSED PLANTER AREA
- AUTO DRAINDOWN MEANS NO MOSQUITO VECTOR

OPERATION

The Modular Wetlands® System Linear is the most efficient and versatile biofiltration system on the market, and it is the only system with horizontal flow which:

- Improves performance
- Reduces footprint
- Minimizes maintenance

Figure 1 & Figure 2 illustrate the invaluable benefits of horizontal flow and the multiple treatment stages.

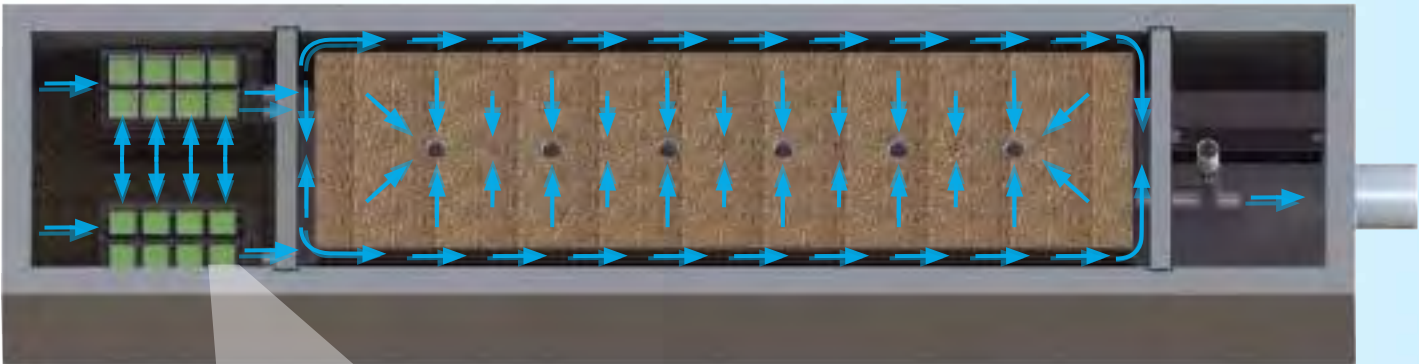


Figure 2,
Top View

2x to 3x more surface area than traditional downward flow bioretention systems.

1 PRETREATMENT

SEPARATION

- Trash, sediment, and debris are separated before entering the pre-filter cartridges
- Designed for easy maintenance access

PRE-FILTER CARTRIDGES

- Over 25 sq. ft. of surface area per cartridge
- Utilizes BioMediaGREEN™ filter material
- Removes over 80% of TSS and 90% of hydrocarbons
- Prevents pollutants that cause clogging from migrating to the biofiltration chamber

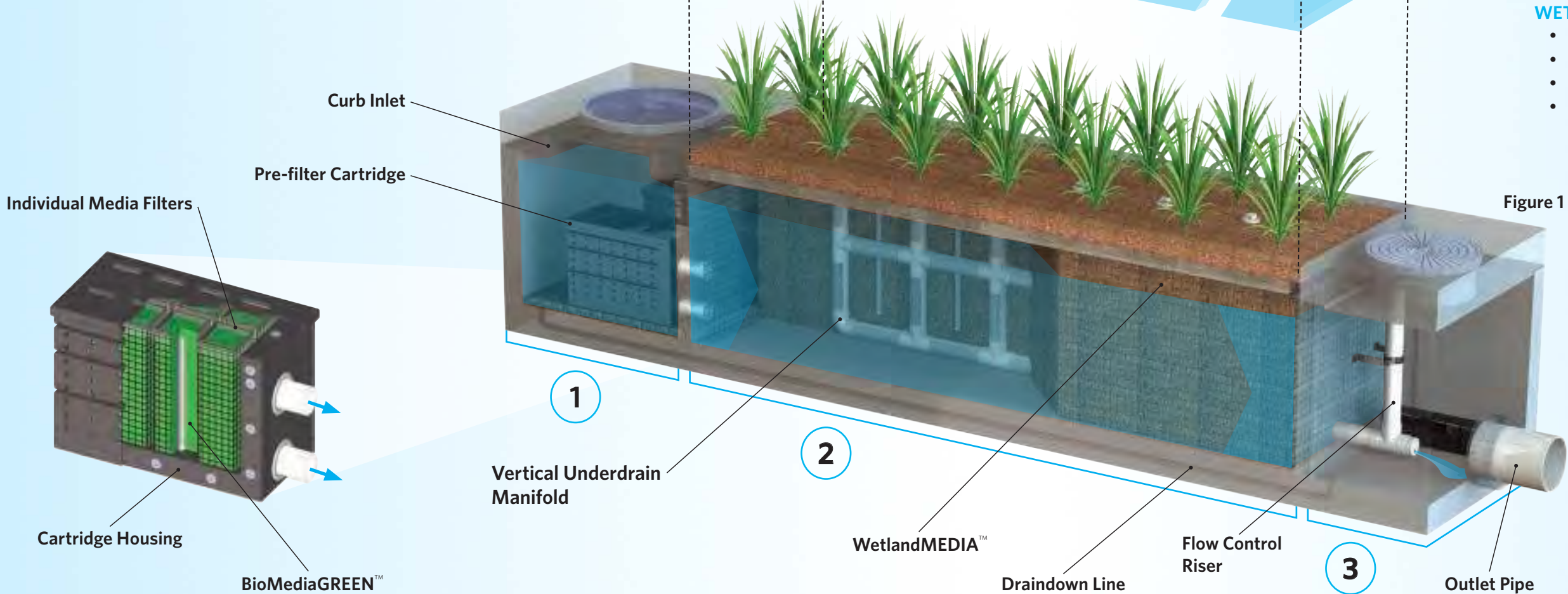


Figure 1

2 BIOFILTRATION

HORIZONTAL FLOW

- Less clogging than downward flow biofilters
- Water flow is subsurface
- Improves biological filtration

PATENTED PERIMETER VOID AREA

- Vertically extends void area between the walls and the WetlandMEDIA™ on all four sides
- Maximizes surface area of the media for higher treatment capacity

WETLANDMEDIA

- Contains no organics and removes phosphorus
- Greater surface area and 48% void space
- Maximum evapotranspiration
- High ion exchange capacity and lightweight

3 DISCHARGE

FLOW CONTROL

- Orifice plate controls flow of water through WetlandMEDIA™ to a level lower than the media's capacity
- Extends the life of the media and improves performance

DRAINDOWN FILTER

- The draindown is an optional feature that completely drains the pretreatment chamber
- Water that drains from the pretreatment chamber between storm events will be treated



CONFIGURATIONS

The Modular Wetlands® System Linear is the preferred biofiltration system of civil engineers across the country due to its versatile design. This highly versatile system has available “pipe-in” options on most models, along with built-in curb or grated inlets for simple integration into your storm drain design.



CURB TYPE

The Curb Type configuration accepts sheet flow through a curb opening and is commonly used along roadways and parking lots. It can be used in sump or flow-by conditions. Length of curb opening varies based on model and size.



GRATE TYPE

The Grate Type configuration offers the same features and benefits as the Curb Type but with a grated/drop inlet above the systems pretreatment chamber. It has the added benefit of allowing pedestrian access over the inlet. ADA-compliant grates are available to assure easy and safe access. The Grate Type can also be used in scenarios where runoff needs to be intercepted on both sides of landscape islands.



VAULT TYPE

The system’s patented horizontal flow biofilter is able to accept inflow pipes directly into the pretreatment chamber, meaning the Modular Wetlands® can be used in end-of-the-line installations. This greatly improves feasibility over typical decentralized designs that are required with other biofiltration/bioretention systems. Another benefit of the “pipe-in” design is the ability to install the system downstream of underground detention systems to meet water quality volume requirements.



DOWNSPOUT TYPE

The Downspout Type is a variation of the Vault Type and is designed to accept a vertical downspout pipe from rooftop and podium areas. Some models have the option of utilizing an internal bypass, simplifying the overall design. The system can be installed as a raised planter, and the exterior can be stuccoed or covered with other finishes to match the look of adjacent buildings.

ORIENTATIONS

SIDE-BY-SIDE

The Side-By-Side orientation places the pretreatment and discharge chamber adjacent to one another with the biofiltration chamber running parallel on either side. This minimizes the system length, providing a highly compact footprint. It has been proven useful in situations such as streets with directly adjacent sidewalks, as half of the system can be placed under that sidewalk. This orientation also offers internal bypass options as discussed below.



END-TO-END

The End-To-End orientation places the pretreatment and discharge chambers on opposite ends of the biofiltration chamber, therefore minimizing the width of the system to 5 ft. (outside dimension). This orientation is perfect for linear projects and street retrofits where existing utilities and sidewalks limit the amount of space available for installation. One limitation of this orientation is that bypass must be external.



BYPASS

INTERNAL BYPASS WEIR (SIDE-BY-SIDE ONLY)

The Side-By-Side orientation places the pretreatment and discharge chambers adjacent to one another allowing for integration of internal bypass. The wall between these chambers can act as a bypass weir when flows exceed the system’s treatment capacity, thus allowing bypass from the pretreatment chamber directly to the discharge chamber.

EXTERNAL DIVERSION WEIR STRUCTURE

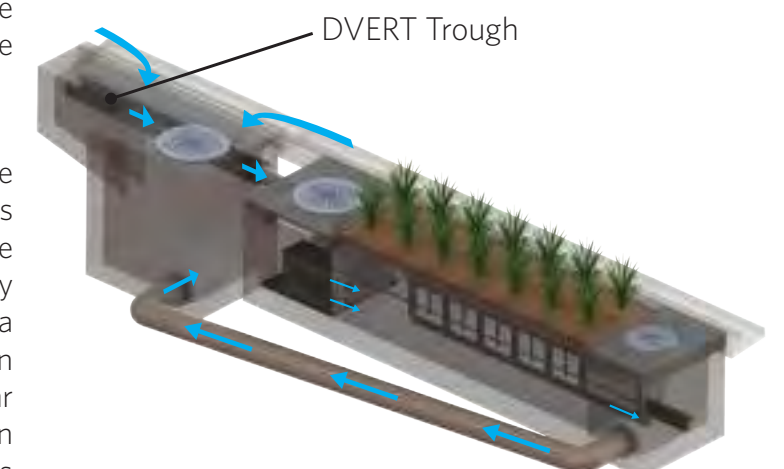
This traditional offline diversion method can be used with the Modular Wetlands® in scenarios where runoff is being piped to the system. These simple and effective structures are generally configured with two outflow pipes. The first is a smaller pipe on the upstream side of the diversion weir - to divert low flows over to the Modular Wetlands® for treatment. The second is the main pipe that receives water once the system has exceeded treatment capacity and water flows over the weir.

FLOW-BY-DESIGN

This method is one in which the system is placed just upstream of a standard curb or grate inlet to intercept the first flush. Higher flows simply pass by the Modular Wetlands® and into the standard inlet downstream.

DVERT LOW FLOW DIVERSION

This simple yet innovative diversion trough can be installed in existing or new curb and grate inlets to divert the first flush to the Modular Wetlands® via pipe. It works similar to a rain gutter and is installed just below the opening into the inlet. It captures the low flows and channels them over



to a connecting pipe exiting out the wall of the inlet and leading to the MWS Linear. The DVERT is perfect for retrofit and green street applications that allow the Modular Wetlands® to be installed anywhere space is available.

SPECIFICATIONS

FLOW-BASED DESIGNS

The Modular Wetlands® System Linear can be used in stand-alone applications to meet treatment flow requirements. Since the Modular Wetlands® 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® with
Box Culvert Prestorage

The Modular Wetlands® System Linear offers a unique advantage in the world of biofiltration due to its exclusive horizontal flow design: Volume-Based Design. 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 systems 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. In the example above, the Modular Wetlands® is installed downstream of underground box culvert storage. Designed for the water quality volume, the Modular Wetlands® will treat and discharge the required volume within local draindown time requirements.



Modular Wetlands® with
Arch Plastic Chambers

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 Modular Wetlands®, the only biofilter than can be used downstream of storage BMPs.

ADVANTAGES

- LOWER COST THAN FLOW-BASED DESIGN
- BUILT-IN ORIFICE CONTROL STRUCTURE
- MEETS LID REQUIREMENTS
- WORKS WITH DEEP INSTALLATIONS

APPLICATIONS

The Modular Wetlands® System Linear has been successfully used on numerous new construction and retrofit projects. The system's superior versatility makes it beneficial for a wide range of stormwater and waste water applications - treating rooftops, streetscapes, parking lots, and industrial sites.



INDUSTRIAL

Many states enforce strict regulations for discharges from industrial sites. The Modular Wetlands® has helped various sites meet difficult EPA-mandated effluent limits for dissolved metals and other pollutants.



STREETS

Street applications can be challenging due to limited space. The Modular Wetlands® is very adaptable, and it offers the smallest footprint to work around the constraints of existing utilities on retrofit projects.



COMMERCIAL

Compared to bioretention systems, the Modular Wetlands® can treat far more area in less space, meeting treatment and volume control requirements.



RESIDENTIAL

Low to high density developments can benefit from the versatile design of the Modular Wetlands®. The system can be used in both decentralized LID design and cost-effective end-of-the-line configurations.



PARKING LOTS

Parking lots are designed to maximize space and the Modular Wetlands® 4 ft. standard planter width allows for easy integration into parking lot islands and other landscape medians.



MIXED USE

The Modular Wetlands® can be installed as a raised planter to treat runoff from rooftops or patios, making it perfect for sustainable "live-work" spaces.

More applications include:

- Agriculture
- Reuse
- Low Impact Development
- Waste Water

PLANT SELECTION

Abundant plants, trees, and grasses bring value and an aesthetic benefit to any urban setting, but those in the Modular Wetlands® System Linear do even more - they increase pollutant removal. What's not seen, but very important, is that below grade, the stormwater runoff/flow is being subjected to nature's secret weapon: a dynamic physical, chemical, and biological process working to break down and remove non-point source pollutants. The flow rate is controlled in the Modular Wetlands®, giving the plants more contact time so that pollutants are more successfully decomposed, volatilized, and incorporated into the biomass of the Modular Wetlands'® micro/macro flora and fauna.



A wide range of plants are suitable for use in the Modular Wetlands®, but selections vary by location and climate. View suitable plants by visiting biocleanenvironmental.com/plants.

INSTALLATION



The Modular Wetlands® is simple, easy to install, and has a space-efficient design that offers lower excavation and installation costs compared to traditional tree-box type systems. The structure of the system resembles precast catch basin or utility vaults and is installed in a similar fashion.

The system is delivered fully assembled for quick installation. Generally, the structure can be unloaded and set in place in 15 minutes. Our experienced team of field technicians is available to supervise installations and provide technical support.

MAINTENANCE



Reduce your maintenance costs, man hours, and materials with the Modular Wetlands®. Unlike other biofiltration systems that provide no pretreatment, the Modular Wetlands® is a self-contained treatment train which incorporates simple and effective pretreatment.

Maintenance requirements for the biofilter itself are almost completely eliminated, as the pretreatment chamber removes and isolates trash, sediments, and hydrocarbons. What's left is the simple maintenance of an easily accessible pretreatment chamber that can be cleaned by hand or with a standard vac truck. Only periodic replacement of low-cost media in the pre-filter cartridges is required for long-term operation, and there is absolutely no need to replace expensive biofiltration media.



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Attachment D: Geotechnical Report

May 28, 2024

Project No. 23174-01

Roman Catholic Bishop of Orange
13280 Chapman Avenue
Garden Grove, CA 92840

Subject: Preliminary Geotechnical Subsurface Evaluation, Proposed Residential Development, 14010 Remington, Irvine, California

In accordance with your request, LGC Geotechnical, Inc. has performed a geotechnical subsurface evaluation for the proposed residential development located at 14010 Remington in the City of Irvine, California. This report summarizes the results of our background review, subsurface exploration, and geotechnical analyses of the data collected, and presents our findings, conclusions, and preliminary recommendations for the proposed residential project.

If you should have any questions regarding this report, please do not hesitate to contact our office. We appreciate this opportunity to be of service.

Respectfully,

LGC Geotechnical, Inc.



Barry Graham, CEG 2749
Project Geologist



Dennis Boratynec, GE 2770
Vice President



Branden Petersen, EIT
Senior Staff Engineer

DJB/BPP/amm

Distribution: (1) Addressee (electronic copy, wet signed copies can be provided upon request)

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Appendix E – General Earthwork and Grading Specifications for Rough Grading

1.0 INTRODUCTION

1.1 Purpose and Scope of Services

This report presents the results of our geotechnical subsurface evaluation for the proposed residential development located at 14010 Remington in the City of Irvine, California (see Site Location Map, Figure 1). The purpose of our work was to collect subsurface data in order to confirm that the site can be developed from a geotechnical perspective. Our scope of services included:

- Review of pertinent readily available geotechnical information and geologic maps (Appendix A).
- Subsurface evaluation including excavation, sampling, and logging of six small-diameter hollow stem borings.
- Infiltration testing at two of the small-diameter hollow-stem borings.
- Laboratory testing of representative samples obtained during our subsurface evaluation (Appendix C).
- Geotechnical analysis and evaluation of the data obtained, including:
 - Suitability of the site for the proposed development from a geotechnical standpoint;
 - Description of the site geology, and subsurface soil and groundwater conditions;
 - Evaluation of the seismic conditions at the site, including seismic design criteria based on the 2022 California Building Code (CBC); and
 - Recommendations for remedial grading operations and site preparation.
- Preparation of this report presenting our findings, conclusions and recommendations with respect to the proposed site development.

1.2 Background/Project Description

The approximately 2.9-acre site is bound to the north by an existing church, to the west by Remington, to the south by Roosevelt and east by a residential development. Review of historical aerial photographs suggests the site was undeveloped farmland prior to 1980. By 1985, Roosevelt was constructed but the site remained undeveloped until 2000. The church and associated parking lot was completed by 2002. The site has essentially remained unchanged since then.

The proposed development will consist of 68 multi-family residential units with associated improvements. We expect the proposed residential development will be at-grade with relatively light building loads (column and wall loads assumed to be a maximum of approximately 30 kips and 3 kips per lineal foot, respectively). At this time we do not have any design cut/fill information but we assume design cuts and fills will be less than 5 feet.

The recommendations provided herein are based upon the estimated structural loading, potential grade changes, and expected layout information above. We understand that the project plans are currently being developed at this time; LGC Geotechnical should be provided with updated project plans (including grading, foundation, retaining walls, etc.) and any changes to the assumed structural loads when they become available, in order to either confirm or modify the recommendations provided herein.

Note that an evaluation of the adjacent proposed church site was conducted simultaneously to the proposed residential site. The limits of these sites can be found in Figure 2 - Boring Location Map. The laboratory test results from the church evaluation were also included within this report.

1.3 Subsurface Evaluation

LGC Geotechnical performed a subsurface geotechnical evaluation of the site consisting of the excavation of 6 hollow-stem auger borings.

Six hollow-stem borings (HS-1 through HS-4, I-1, and I-2) were drilled to depths ranging from approximately 10 to 50 feet below existing grade. An LGC Geotechnical representative observed the drilling operations, logged the borings, and collected soil samples for laboratory testing. The borings were excavated using a track-mounted drill rig equipped with 8-inch-diameter hollow-stem augers. Driven soil samples were collected by means of the Standard Penetration Test (SPT) and Modified California Drive (MCD) sampler generally obtained at 2.5 to 5-foot vertical increments. The MCD is a split-barrel sampler with a tapered cutting tip and lined with a series of 1-inch-tall brass rings. The SPT sampler and MCD sampler were driven using a 140-pound automatic hammer falling 30 inches to advance the sampler a total depth of 18 inches. The raw blow counts for each 6-inch increment of penetration were recorded on the boring logs. Bulk samples were also collected and logged at select depths for laboratory testing. At the completion of drilling, the borings were backfilled with the native soil cuttings and tamped. Some settlement of the backfill soils may occur over time.

The approximate locations of borings are shown on the Geotechnical Exploration Location Map (Figure 2). Boring logs are presented in Appendix B.

1.4 Field Percolation Testing

Two falling head field percolation tests (I-1 and I-2) were performed in the approximate locations indicated on our Geotechnical Map (Figure 2). Estimation of infiltration rates for the site was accomplished in general accordance with the guidelines set forth by the County of Orange County (2013). A 3-inch diameter perforated PVC pipe with filter sock was placed in the borehole, and the annulus was backfilled with gravel, including placement of approximately 2 inches of gravel at the bottom of the borehole. The infiltration wells were pre-soaked the day prior to testing. During the pre-test, if the water level drops more than 6 inches in 25 minutes for two consecutive readings, the test procedure for coarse-grained soils was followed. If the water level did not drop 6 inches in one or both pre-test readings, the procedure for fine-grained soils was followed. The procedure for coarse-grained soils requires performing the test for one hour and taking one reading every 10 minutes from a fixed reference point. The procedure for fine-grained soils requires performing the test for six hours and taking one reading every 30 minutes from a fixed reference point.

The pre-tests indicated the procedure for the fine-grained soils should be followed. The calculated infiltration is normalized relative to the three-dimensional flow that occurs within the field test to a one-dimensional flow out of the bottom of the boring only (i.e., "Porchet

Method”). The measured infiltration rates (for feasibility purposes only) are provided in Table 1 below. Please note that infiltration is discussed in Section 4.8 and field data is provided in Appendix D.

Please note that the values provided in Table 1 do not include reduction factors associated with the test procedure, site variability, and long-term siltation plugging that are used to calculate the design infiltration rate.

TABLE 1
Summary of Field Infiltration Testing

Infiltration Test No.	Approx. Depth Below Existing Grade (ft)	Measured Infiltration Rate* (in./hr.)
I-1	10	0.03
I-2	10	0.01

*Measured Infiltration Rates Do Not Include Factor of Safety.

1.5 Laboratory Testing

Laboratory testing was performed on representative soil samples obtained from our subsurface evaluation. Laboratory testing included in-situ moisture and density tests, expansion index, laboratory compaction, collapse and corrosion testing.

The following is a summary of the laboratory test results.

- Dry density of the samples collected ranged from approximately 80 pounds per cubic foot (pcf) to 106 pcf, with an average of approximately 94 pcf. Field moisture contents ranged from approximately 1 percent to 24 percent, with an average of approximately 13 percent.
- Two samples were tested for fines content indicated a fines content (passing No. 200 sieve) ranging from 48 to 68 percent. According to the Unified Soils Classification System (USCS), the tested samples are classified as both “coarse and fine-grained” soil.
- Two Expansion Index (EI) tests were performed. The result indicated an EI value ranging from 112 to 135, corresponding to “High” to “Very High” expansion potential.
- Two laboratory compaction tests of near surface samples indicated a maximum dry density ranging from 115.0 to 117.5 with an optimum moisture content ranging from 12.5 to 14.0 percent.
- Six swell/collapse tests were performed. The plots are provided in Appendix C.
- Corrosion testing indicated soluble sulfate content of 95 parts per million (ppm), chloride content of 60 ppm, and pH value of 7.90, and minimum resistivity of 720 ohm-cm.

A summary of the results is presented in Appendix C. The moisture and dry density test results are presented on the boring logs in Appendix B.



FIGURE 1
Site Location Map

PROJECT NAME	Our Lady of Peace, Irvine
PROJECT NO.	23174-01
ENG. / GEOL.	DJB
SCALE	Not to Scale
DATE	May 2024

2.0 GEOTECHNICAL CONDITIONS

2.1 Regional Geology

The subject site is located along the southeastern margin of the Los Angeles Basin, a large structural depression within the Peninsular Ranges geomorphic province of California. The southeastern portion of Los Angeles Basin includes the Tustin Plain, a shallow alluvial portion of the coastal plain. The site is located in the eastern portion of the Tustin Plain in the Irvine subbasin, generally composed of approximately 200 to 700 feet of unconsolidated to semi-consolidated Pliocene, Quaternary, and Holocene-age alluvial sediments. Soils within this zone consist predominantly of interbedded discontinuous lenses of clay, silt, sand and gravel.

Regional geologic mapping and local topographic expressions do not indicate the presence of large-scale landslides within or adjacent to the project area.

2.2 Site Geology and Generalized Subsurface Conditions

Based on regional mapping (Morton, 2006) and our observations of the site, the subject site is underlain by Young Alluvial Fan Deposits (Qyf). In portions of the site, the young alluvial deposits are overlain by a thin veneer of older artificial fill that was placed during the development of the existing development. The depth of this older artificial fill was found to range from approximately 1 to 2 feet below existing grade during our evaluation but may be found at a deeper depth during construction. As indicated in our field explorations, site soils generally consisted of medium dense to dense clayey sands/silty sands and stiff to hard sandy clays.

It should be noted that borings are only representative of the location and time where/when they are performed, and varying subsurface conditions may exist outside of the performed location. In addition, subsurface conditions can change over time. The soil descriptions provided should not be construed to mean that the subsurface profile is uniform, and that soil is homogenous within the project area. Descriptions of the subsurface conditions are presented on the boring and geotechnical trench logs located in Appendix B.

2.3 Groundwater

Groundwater was not encountered to the maximum explored depth of 51.5 feet below existing grade. Historic high groundwater is estimated to be greater than 40 feet below existing ground surface (CGS, 2001).

In general, groundwater levels fluctuate with the seasons and local zones of perched groundwater may be present within the near-surface deposits due to local seepage or during rainy seasons. Groundwater conditions below the site may be variable, depending on numerous factors including seasonal rainfall, local irrigation, and groundwater pumping, among others.

2.4 Faulting and Seismic Hazards

Prompted by damaging earthquakes in California, State legislation and policies concerning the classification and land-use criteria associated with faults have been developed. Their purpose was to prevent the construction of urban developments across the trace of active faults, resulting in the Alquist-Priolo Earthquake Fault Zoning Act. Earthquake Fault Zones have been delineated along the traces of active faults within California. Where developments for human occupation are proposed within these zones, the State requires detailed fault evaluations be performed so that engineering geologists can mitigate the hazards associated with active faulting by identifying the location of active faults and allowing for a setback from zones of previous ground rupture.

The subject site is not located within an Alquist-Priolo Earthquake Fault Zone and no faults were identified on the site during our site evaluation. The possibility of damage due to ground rupture is considered low since no active faults are known to cross the site.

Secondary effects of seismic shaking resulting from large earthquakes on the major faults in the Southern California region, which may affect the site, include ground lurching, shallow ground rupture, soil liquefaction and dynamic settlement. These secondary effects of seismic shaking are a possibility throughout the Southern California region and are dependent on the distance between the site and causative fault and the onsite geology. Some of the major active nearby faults that could produce these secondary effects include the San Joaquin Hills, Whittier, Elsinore, Newport-Inglewood, among others (CGS, 2018). A discussion of these secondary effects is provided in the following sections.

2.4.1 Liquefaction and Dynamic Settlement

Liquefaction is a seismic phenomenon in which loose, saturated, granular soils behave similarly to a fluid when subject to high-intensity ground shaking. Liquefaction occurs when three general conditions coexist: 1) shallow groundwater; 2) low density non-cohesive (granular) soils; and 3) high-intensity ground motion. Studies indicate that loose, saturated, near-surface, cohesionless soils exhibit the highest liquefaction potential, while dry, dense, cohesionless soils, and cohesive soils exhibit low to negligible liquefaction potential. In general, cohesive soils are not considered susceptible to liquefaction. Effects of liquefaction on level ground include settlement, sand boils, and bearing capacity failures below structures. Furthermore, dynamic settlement of dry sands can occur as the sand particles tend to settle and densify as a result of a seismic event.

Based on our review of the State of California Seismic Hazard Zone for liquefaction potential (CDMG, 2001), the subject site is not located within a liquefaction hazard zone. Based on our evaluation, site soils are generally not susceptible to liquefaction due to the fine-grained nature of the on-site soils and low probability of groundwater in the upper 50 feet. Therefore, liquefaction potential is considered low.

2.4.2 Lateral Spreading

Lateral spreading is a type of liquefaction induced ground failure associated with the lateral displacement of surficial blocks of sediment resulting from liquefaction in a subsurface layer. Once liquefaction transforms the subsurface layer into a fluid mass, gravity plus the earthquake inertial forces may cause the mass to move downslope towards a free face (such as a river channel or an embankment). Lateral spreading may cause large horizontal displacements and such movement typically damages pipelines, utilities, bridges, and structures.

Due to the site being relatively flat, low liquefaction potential and the lack of an adjacent “free face” to drive lateral spreading, the potential for lateral spreading is considered very low.

2.5 Seismic Design Criteria

The site seismic characteristics were evaluated per the guidelines set forth in Chapter 16, Section 1613 of the 2022 California Building Code (CBC) and applicable portions of ASCE 7-16 which has been adopted by the CBC. Please note that the following seismic parameters are only applicable for code-based acceleration response spectra and are not applicable for where site-specific ground motion procedures are required by ASCE 7-16. Representative site coordinates of latitude 33.699559 degrees north and longitude -117.768908 degrees west were utilized in our analyses. The maximum considered earthquake (MCE) spectral response accelerations (S_{MS} and S_{M1}) and adjusted design spectral response acceleration parameters (S_{DS} and S_{D1}) for Site Class D are provided in Table 2 on the following page. Since site soils are Site Class D, additional adjustments are required to code acceleration response spectrums as outlined below and provided in ASCE 7-16. The structural designer should contact the geotechnical consultant if structural conditions (e.g., number of stories, seismically isolated structures, etc.) require site-specific ground motions.

TABLE 2
Seismic Design Parameters

Selected Parameters from 2022 CBC, Section 1613 - Earthquake Loads	Seismic Design Values	Notes/Exceptions
Distance to applicable faults classifies the site as a "Near-Fault" site.		Section 11.4.1 of ASCE 7
Site Class	D*	Chapter 20 of ASCE 7
S _s (Risk-Targeted Spectral Acceleration for Short Periods)	1.257g	From SEAOC, 2024
S ₁ (Risk-Targeted Spectral Accelerations for 1-Second Periods)	0.449g	From SEAOC, 2024
F _a (per Table 1613.2.3(1))	1.0	For Simplified Design Procedure of Section 12.14 of ASCE 7, F _a shall be taken as 1.4 (Section 12.14.8.1)
F _v (per Table 1613.2.3(2))	1.851	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S _{MS} for Site Class D [Note: S _{MS} = F _a S _s]	1.257g	-
S _{M1} for Site Class D [Note: S _{M1} = F _v S ₁]	0.831g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
S _{DS} for Site Class D [Note: S _{DS} = (2/3)S _{MS}]	0.838g	-
S _{D1} for Site Class D [Note: S _{D1} = (2/3)S _{M1}]	0.554g	Value is only applicable per requirements/exceptions per Section 11.4.8 of ASCE 7
C _{RS} (Mapped Risk Coefficient at 0.2 sec)	0.940	ASCE 7 Chapter 22
C _{R1} (Mapped Risk Coefficient at 1 sec)	0.932	ASCE 7 Chapter 22
*Since site soils are Site Class D and S ₁ is greater than or equal to 0.2, the seismic response coefficient C _s is determined by Eq. 12.8-2 for values of T ≤ 1.5T _s and taken equal to 1.5 times the value calculated in accordance with either Eq. 12.8-3 for T _L ≥ T > T _s , or Eq. 12.8-4 for T > T _L . Refer to ASCE 7-16. Site Class F modified to Site Class D, seismic parameters only applicable for structure period ≤ 0.5 second, refer to discussion above.		

A deaggregation of the PGA based on a 2,475-year average return period (MCE) indicates that an earthquake magnitude of 6.55 at a distance of approximately 14.72 km from the site would contribute the most to this ground motion. A deaggregation of the PGA based on a 475-year average return period (Design Earthquake) indicates that an earthquake magnitude of 6.56 at a distance of approximately 21.38 km from the site would contribute the most to this ground motion (USGS, 2014).

Section 1803.5.12 of the 2022 CBC (per Section 11.8.3 of ASCE 7) states that the maximum considered earthquake geometric mean (MCE_G) Peak Ground Acceleration (PGA) should be used for liquefaction potential. The PGA_M for the site is equal to 0.576g (SEAOC, 2024). The design PGA is equal to 0.384g (2/3 of PGA_M).

2.6 Oversized Material

Oversized materials (material larger than 8 inches in maximum dimension) are not anticipated to be encountered during site grading based on our subsurface evaluation. If encountered, recommendations are provided for appropriate handling of oversized materials in Appendix E.

2.7 Expansion Potential

Based on the results of laboratory testing from our evaluation and from nearby sites, finished grade soils are anticipated to have a “High to Very High” expansion potential. Final expansion potential of site soils should be determined at the completion of grading.

2.8 Soils Susceptible to Hydro-Collapse

Soils that are typically susceptible to hydro-collapse (or collapsible soils) are predominately sand and silt held in a loose honeycomb structure. This relatively loose honeycomb structure is held together by small amounts clay or calcium carbonate acting as a temporary (soluble) cementing agent. If the soil remains dry the soil maintains its structure, however the addition of water to the soil will greatly weaken the honeycomb structure and the soil can subsequently experience immediate collapses. This collapse results in rapid soil settlement and potential damage to any improvements which are located without the zone of influence of the collapsible soils.

Laboratory testing for hydro-collapse is typically performed per American Society for Testing and Materials (ASTM) Test Method D5333 or ASTM D 2435. The two most common categorizations of hydro-collapse potential are ASTM D5333 and the Naval Facilities Engineering Command (NFEC, 1986) are shown in Table 3A and 3B below. As indicated in Table 3B soils with collapse potential above 5 percent are considered “trouble”.

TABLE 3A

Classification of Soil Collapsibility per ASTM D 5333

Collapse Index (I_c)	Collapse (%)	Collapse Potential
0	0	None
0.001 - 0.02	0.1 - 2	Slight
0.021 - 0.60	2.1 - 6	Moderate
0.60 - 0.10	6 - 10	Moderately Severe
> 0.10	> 10	Severe

TABLE 3B

Classification of Soil Collapsibility per NFEC, 1986

Collapse Potential (%)	Severity of Problem
0-1	No Problem
1-5	Moderate Trouble
5-10	Trouble
10-20	Severe Trouble
20	Very Severe Trouble

A summary of the onsite soils with the most significant collapse potential are provided in Table 4 on the following page. The measured collapse potential is up to 7.5 percent, with three samples indicating collapse potential of 5 percent or greater.

TABLE 4

Summary of Hydro-Collapse Laboratory Test Results

Boring	Laboratory Measured Collapse (%)
HS-2 @ 10 feet	7.5
HS-2 @ 15 feet	1.7
HS-3 @ 10 feet	6.2
HS-5 @ 10 feet	5.1

3.0 CONCLUSIONS

Based on the results of our subsurface geotechnical evaluation, it is our opinion that the proposed improvements are feasible from a geotechnical standpoint, provided that the recommendations contained in the following sections are incorporated during site development. A summary of our geotechnical conclusions are as follows:

- In general, borings excavated at the subject site indicate primarily native soils consisting of clayey sand, silty sand and sandy clay to the maximum explored depth of approximately 51.5 feet below existing grade. Native alluvial materials were found locally overlain by a relatively thin veneer of old artificial fill associated with previous development of the site. The near-surface loose and compressible soils are not suitable for the planned improvements in their present condition (refer to Section 4.1).
- Groundwater was not encountered to the maximum explored depth of 51.5 feet below existing grade. Historic high groundwater is estimated to be greater than 40 feet below existing ground surface (CGS, 2001).
- The subject study area is not located within a mapped State of California Earthquake Fault Zone, and based upon our review of published geologic mapping, no known active or potentially active faults are known to exist within or in the immediate vicinity of the site. Therefore, the potential for ground rupture as a result of faulting is considered very low.
- The main seismic hazard that may affect the site is ground shaking from one of the active regional faults. The subject site will likely experience strong seismic ground shaking during its design life.
- The site is not located in a mapped liquefaction hazard zone. Based on our evaluation, site soils are generally not susceptible to liquefaction due to the fine-grained nature of the on-site soils and low probability of groundwater in the upper 50 feet. Therefore, liquefaction potential is considered low.
- Based on the results of preliminary laboratory testing, site soils are anticipated to have "High to Very High" expansion potential. Final design expansion potential must be determined at the completion of grading.
- Excavations into the existing site soils should be feasible with heavy construction equipment in good working order. We anticipate that soils generated from the excavations will be generally suitable for re-use as compacted fill, provided they are relatively free of rocks larger than 8 inches in dimension, construction debris, and significant organic material.
- Oversized materials (greater than 8 inches in maximum dimension) are not likely to be encountered during site grading. If encountered, recommendations are provided for appropriate handling of oversized materials in Appendix E.
- The onsite soils are not suitable for backfill of site retaining walls. Therefore, import of sandy soils meeting project recommendations will be required.
- Field testing resulted in a measured infiltration rate ranging from 0.01 to 0.03 inches per hour. The measured infiltration rates do not include a factor of safety. Discussion regarding infiltration is provided in Section 4.8.
- Some of the site soils are susceptible to hydro-collapse. To mitigate this condition, the soils most susceptible to collapse should be temporarily removed and recompacted as fill during the grading operations.
- Pre-soaking of the subgrade for building slabs (and flatwork) will be required due to site expansive soils. The duration and process varies greatly based on the chosen method and is also

dependent on factors such as soil type and weather conditions. Time duration for presoaking from completion of rough grading to trenching of foundations should be accounted for in the construction schedule (typically 2 to 3 weeks).

4.0 RECOMMENDATIONS

The following recommendations are to be considered preliminary and should be confirmed upon completion of grading and earthwork operations. In addition, they should be considered minimal from a geotechnical viewpoint, as there may be more restrictive requirements from the architect, structural engineer, building codes, governing agencies, or the owner.

It should be noted that the following geotechnical recommendations are intended to provide sufficient information to develop the site in general accordance with the 2022 CBC requirements. With regard to the possible occurrence of potentially catastrophic geotechnical hazards such as fault rupture, earthquake-induced landslides, liquefaction, etc. the following geotechnical recommendations should provide adequate protection for the proposed development to the extent required to reduce seismic risk to an “acceptable level.” The “acceptable level” of risk is defined by the California Code of Regulations as “that level that provides reasonable protection of the public safety, though it does not necessarily ensure continued structural integrity and functionality of the project” [Section 3721(a)]. Therefore, repair and remedial work of the proposed improvement may be required after a significant seismic event. With regards to the potential for less significant geologic hazards to the proposed development, the recommendations contained herein are intended as a reasonable protection against the potential damaging effects of geotechnical phenomena such as expansive soils, fill settlement, groundwater seepage, etc. It should be understood, however, that our recommendations are intended to maintain the structural integrity of the proposed development and structures given the site geotechnical conditions but cannot preclude the potential for some cosmetic distress or nuisance issues to develop as a result of the site geotechnical conditions.

The geotechnical recommendations contained herein must be confirmed to be suitable or modified based on the actual as-graded conditions.

4.1 Site Earthwork

Rough grading shall include remedial earthwork grading and placement of engineered compacted fill to design grades. Geotechnical recommendations for precise grading and construction of the proposed new improvements will be provided, as necessary.

We recommend that earthwork onsite be performed in accordance with the following recommendations, future grading plan review report(s), the 2022 CBC/City of Irvine requirements, and the General Earthwork and Grading Specifications for Rough Grading included in Appendix E. In case of conflict, the following recommendations shall supersede those included in Appendix E. The following recommendations may be revised within future grading plan review reports or based on the actual conditions encountered during site grading.

4.1.1 Site Preparation

Prior to grading, areas to be developed should undergo complete demolition, removal of all vegetation, and clearing of pavements, existing utilities, foundation and slab elements from the site. Vegetation, debris from the previous land use and excessive organic

material should be removed and properly disposed of offsite. Holes resulting from removals of buried obstructions, which extend below proposed remedial and/or finish grades, should be replaced with suitable compacted fill material. If the demolition contractor removes subsurface utilities below the proposed remedial grading depth we recommend the excavations either be left open until grading operations begin or properly compacted to the depth of remedial grading.

If cesspools or septic systems are encountered, they should be removed in their entirety. The resulting excavation should be backfilled with properly compacted fill soils. As an alternative, cesspools can be backfilled with lean sand-cement slurry. Any encountered wells should be properly abandoned in accordance with regulatory requirements.

4.1.2 Removal Depths and Limits

In order to provide a relatively uniform bearing condition for the planned improvements, we recommend the near-surface potentially compressible soils and soils highly susceptible to collapse be temporarily removed and recompacted as engineered fill. If any undocumented artificial fill is encountered within the influence of the proposed building pads, the soils should be removed to competent native materials.

In order to promote more uniform soil conditions, soils shall be temporarily removed and recompacted to a minimum depth of approximately 12 feet below existing grade or 3 feet below the bottom of proposed foundations, whichever is deeper. Additionally, existing undocumented fill and unsuitable topsoil encountered within the building footprints should be temporarily removed and recompacted as compacted fill. Where space is available, the envelope for removal and recompaction should extend laterally a minimum distance equal to the depth of removal and recompaction below finish grade or 5 feet beyond the edges of the proposed building improvements, whichever is larger.

Local conditions may be encountered during excavation that could require additional over-excavation beyond the above noted minimum in order to obtain an acceptable subgrade. The actual depths and lateral extents of grading will be determined by the geotechnical consultant, based on subsurface conditions encountered during grading. Removal areas and areas to be over-excavated should be accurately staked in the field by the Project Surveyor.

4.1.3 Temporary Excavations

Temporary excavations should be performed in accordance with project plans, specifications, and applicable Occupational Safety and Health Administration (OSHA) requirements. Excavations should be laid back or shored in accordance with OSHA requirements before personnel or equipment are allowed to enter. Based on our field investigation, the majority of site soils are anticipated to be OSHA Type "B" soils (refer to the attached boring logs) with the potential for shallow groundwater. Sandy soils are present and should be considered susceptible to caving. Soil conditions should be regularly evaluated during construction to verify conditions are as anticipated. The

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contractor shall be responsible for providing the “competent person” required by OSHA standards to evaluate soil conditions. Close coordination with the geotechnical consultant should be maintained to facilitate construction while providing safe excavations. Excavation safety is the sole responsibility of the contractor.

Where proposed improvements will be adjacent to property lines, the potential for impacting existing offsite improvements may be reduced by performing “ABC” slot cuts while performing earthwork removal and recompaction. “ABC” slot cuts are defined as excavations perpendicular to sensitive property boundaries that are divided into multiple “slots” of equal width. If slots are labeled A, B, C, A, B, C, etc., then all “A” slots can be excavated at the same time but must be backfilled before all “B” slots can be excavated, etc. Any given slot should be backfilled immediately with properly compacted fill to finish grade prior to excavation of the adjacent two slots. Please note some sands susceptible to caving are present at the site. Recommendations for slot cut dimensions should be evaluated during grading. Protection of the existing offsite improvements during grading is the responsibility of the contractor.

Vehicular traffic, stockpiles, and equipment storage should be set back from the perimeter of excavations a minimum distance equivalent to a 1:1(horizontal to vertical) projection from the bottom of the excavation or 5 feet, whichever is greater. Once an excavation has been initiated, it should be backfilled as soon as practical. Prolonged exposure of temporary excavations may result in some localized instability. Excavations should be planned so that they are not initiated without sufficient time to shore/fill them prior to weekends, holidays, or forecasted rain.

It should be noted that any excavation that extends below a 1:1 (horizontal to vertical) projection of an existing foundation will remove existing support of the structure foundation. If requested, temporary shoring parameters will be provided.

4.1.4 Removal Bottoms and Subgrade Preparation

In general, removal bottoms, over-excavation bottoms and areas to receive compacted fill should be scarified to a minimum depth of 6 inches, brought to a near-optimum moisture condition (generally within optimum and 2 percent above optimum moisture content), and re-compacted per project recommendations.

Removal bottoms, over-excavation bottoms and areas to receive fill should be observed and accepted by the geotechnical consultant prior to subsequent fill placement.

4.1.5 Material for Fill

From a geotechnical perspective, the onsite soils are generally considered suitable for use as general compacted fill, provided they are screened of significant organic materials, construction debris and any oversized material (8 inches in greatest dimension).

From a geotechnical viewpoint, import soils for general fill (i.e., non-retaining wall backfill) should consist of clean, granular soils of Medium expansion potential (expansion index 90 or less based on ASTM D4829). Import for retaining wall backfill should meet the criteria outlined in the paragraph below. Source samples should be provided to the geotechnical consultant for laboratory testing a minimum of three working days prior to any planned importation.

Retaining wall backfill should consist of imported sandy soils with a maximum of 35 percent fines (passing the No. 200 sieve) per ASTM Test Method D1140 (or ASTM D6913/D422) and a “Very Low” expansion potential (EI of 20 or less per ASTM D4829). Soils should also be screened of organic materials, construction debris, and any material greater than 3 inches in maximum dimension.

Aggregate base should conform to the requirements of Section 200-2 of the most recent version of the Standard Specifications for Public Works Construction (“Greenbook”) for untreated base materials and/or City of Irvine requirements.

The placement of demolition materials in compacted fill is acceptable from a geotechnical viewpoint provided the demolition material is broken up into pieces not larger than typically used for aggregate base (approximately 2 to 4 inches in maximum dimension) and well blended into fill soils with essentially not resulting voids. Demolition material placed in fills must be free of construction debris (wood, organics, etc.) and reinforcing steel. If you elect to incorporate asphalt concrete fragments into the fill materials, approval from an environmental viewpoint and/or local agency may be required and is not the purview of the geotechnical consultant. From our previous experience, we recommend that asphalt concrete fragments be limited to fill areas within planned street areas (i.e., not within building pad areas) or exported.

4.1.6 Placement and Compaction of Fills

Material to be placed as fill should be brought to near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content) and recompacted to at least 90 percent relative compaction (per ASTM D1557). Moisture conditioning of site soils will be required in order to achieve adequate compaction. Drying and/or mixing the very moist soils will be required prior to reusing the materials in compacted fills. Soils are also present that will require additional moisture in order to achieve the required compaction.

The optimum lift thickness to produce a uniformly compacted fill will depend on the type and size of compaction equipment used. In general, fill should be placed in uniform lifts not exceeding 8 inches in compacted thickness. Each lift should be thoroughly compacted and accepted prior to subsequent lifts. Generally, placement and compaction of fill should be performed in accordance with local grading ordinances and with observation and testing by LGC Geotechnical. Oversized material as previously defined should be removed from site fills.

During backfill of excavations, the fill should be properly benched into firm and competent soils of temporary backcut slopes as it is placed in lifts.

Aggregate base material should be compacted to a minimum of 95 percent relative compaction at or slightly above optimum moisture content per ASTM D1557. Subgrade below aggregate base should be compacted to a minimum of 90 percent relative compaction per ASTM D1557 at near-optimum moisture content (generally within optimum and 2 percent above optimum moisture content).

4.1.7 Trench and Retaining Wall Backfill and Compaction

The onsite materials may generally be suitable as trench backfill provided the soils are screened of organic matter and rocks greater than 6 inches in diameter. Trench backfill should be compacted in uniform lifts (generally not exceeding 12 inches in compacted thickness) by mechanical means to at least 90 percent relative compaction (per ASTM Test Method D1557). A representative from LGC Geotechnical should observe and test the backfill to verify compliance with the project recommendations.

Some manufacturers have restrictions for the type of soil in contact with pipes. Manufacturer specifications for soils surrounding the pipe should be reviewed and approved by the pipe designer for use prior to construction. The use of open-graded rock as backfill must include means of reducing migration of fines of adjacent materials into the void spaces. This can be done by wrapping the open-graded rock in a filter fabric or introducing an excavatable flowable fill to the rock.

Compactive efforts must be made for all backfill soil types except for flowable fill. There must be room between the trench side walls and the springline of the pipe for mechanical compaction equipment to get adequate compaction of the soil under the haunches of the pipe. If mechanical compaction may result in damage to pipes, clean sand having a Sand Equivalent (SE) greater than or equal to 20 (per California Test Method [CTM] 217) can be used to shade the pipes. Sand backfill should be densified by jetting or flooding and then tamped to ensure adequate compaction. Sand grains should be from a natural source with rounded shape. Manufactured sand from crushed rock or recycled material is not suitable for jetting/flooding as the grains are typically angular in shape and do not densify well enough with these methods.

Retaining wall backfill should consist of approved imported sandy soils as outlined in preceding Section 4.1.5. The onsite soils are not suitable for backfill of site retaining walls based on their fines content and expansion potential. Therefore, import of sandy soils meeting project recommendations will be required. The limits of select sandy backfill should extend a minimum $\frac{1}{2}$ the height of the retaining wall or the width of the heel (if applicable), whichever is greater, refer to Figure 3. Retaining wall backfill soils should be compacted in relatively uniform thin lifts to at least 90 percent relative compaction (per ASTM D1557). Jetting or flooding of retaining wall backfill materials should not be permitted.

A representative from LGC Geotechnical should observe, probe, and test the backfill to verify compliance with the project recommendations.

4.1.8 Shrinkage and Subsidence

Allowance in the earthwork volumes budget should be made for an estimated 5 to 15 percent reduction in volume of near-surface (upper approximate 5 feet) soils. It should be stressed that these values are only estimates and that an actual shrinkage factor would be extremely difficult to predetermine. The effective change in volume of onsite soils will depend primarily on the type of compaction equipment, method of compaction used onsite by the contractor, and accuracy of the topographic survey.

Due to the combined variability in topographic surveys, inability to precisely model the removals and variability of on-site near-surface conditions, it is our opinion that the site will not balance at the end of grading. If importing/exporting a large volume of soils is not considered feasible or economical, we recommend a balance area be designated onsite that can fluctuate up or down based on the actual volume of soil. We recommend a "balance" area that can accommodate on the order of 5 percent (plus or minus) of the total grading volume be considered.

4.2 Preliminary Foundation Recommendations

Provided that the remedial grading recommendations provided herein are implemented, the site may be considered suitable for the support of the residential structures using a post-tensioned foundation system designed to resist the impacts of expansive soils. Site soils are anticipated to be of High to Very High expansion potential (EI of greater than 90 per ASTM D4829). However, this must be verified based on as-graded conditions. Please note that the following foundation recommendations are preliminary and must be confirmed by LGC Geotechnical at the completion of project plans (i.e., foundation, grading and site layout plans) as well as completion of earthwork. Recommended soil bearing and estimated static settlement are provided in Section 4.3.

4.2.1 Provisional Post-Tensioned Foundation Design Parameters

The geotechnical parameters provided herein may be used for post-tensioned slab foundations with a deepened perimeter footing or a post-tensioned mat slab. These parameters have been determined in general accordance with the Post-Tensioning Institute (PTI) Standard Requirements for Design of Shallow Post-Tensioned Concrete Foundations on Expansive Soils, referenced in Chapter 18 of the 2022 CBC. In utilizing these parameters, the foundation engineer should design the foundation system in accordance with the allowable deflection criteria of applicable codes and the requirements of the structural designer/architect. Other types of stiff slabs may be used in place of the CBC post-tensioned slab design provided that, in the opinion of the foundation structural designer, the alternative type of slab is at least as stiff and strong as that designed by the CBC/PTI method.

Our design parameters are based on our experience with similar projects, test results onsite, and the anticipated nature of the soil (with respect to expansion potential). Please note that implementation of our recommendations will not eliminate foundation

movement (and related distress) should the moisture content of the subgrade soils fluctuate. It is the intent of these recommendations to help maintain the integrity of the proposed structures and reduce (not eliminate) movement, based upon the anticipated site soil conditions. Should future owners and/or property maintenance personnel not properly maintain the areas surrounding the foundation, for example by overwatering, then we anticipate for highly expansive soils the maximum differential movement of the perimeter of the foundation to the center of the foundation to be on the order of a couple of inches. Soils of lower expansion potential are anticipated to show less movement.

TABLE 5

Preliminary Post-Tensioned Foundation Design Parameters

Parameter	PT Slab with Perimeter Footing	PT Mat with Thicken ed Edge
Expansion Potential	Very High	Very High
Thorntwaite Moisture Index	-20	-20
Constant Soil Suction	PF 3.9	PF 3.9
Center Lift Edge moisture variation distance, e_m Center lift, y_m	6.1 feet 1.0 inch	6.1 feet 1.2 inch
Edge Lift Edge moisture variation distance, e_m Edge lift, y_m	3.4 feet 2.5 inches	3.4 feet 2.5 inches
Modulus of Subgrade Reaction, k (assuming presoaking as indicated below)	100 pci	100 pci
Minimum perimeter footing/thickened edge embedment below finish grade	30 inches	6 inches
Minimum Slab Thickness	6 inches ²	10 inches ²
Presoak	140% of Opt. 30 inches	140% of Opt. 30 inches
1. Expansion index is for preliminary design purposes. Further evaluation is needed at the completion of grading. 2. Recommendations for foundation reinforcement and slab thickness are ultimately the purview of the foundation engineer/structural engineer based upon geotechnical criteria and structural engineering considerations. 3. Recommendations for vapor retarders below slabs are also the purview of the foundation engineer/structural engineer and should be provided in accordance with applicable code requirements.		

4.2.2 Shallow Foundation Maintenance

The geotechnical parameters provided herein assume that if the areas adjacent to the foundation are planted and irrigated, these areas will be designed with proper drainage and adequately maintained so that ponding, which causes significant moisture changes below the foundation, does not occur. Our recommendations do not account for excessive irrigation and/or incorrect landscape design. Plants should only be provided with sufficient irrigation for life and not overwatered to saturate subgrade soils. Sunken planters placed adjacent to the foundation should either be designed with an efficient drainage system or liners to prevent moisture infiltration below the foundation. Some lifting of the perimeter foundation beam should be expected even with properly constructed planters.

In addition to the factors mentioned above, future owners/property management personnel should be made aware of the potential negative influences of trees and/or other large vegetation. Roots that extend near the vicinity of foundations can cause distress to foundations. Future owners (and the owner's landscape architect) should not plant trees/large shrubs closer to the foundations than a distance equal to half the mature height of the tree or 20 feet, whichever is more conservative unless specifically provided with root barriers to prevent root growth below the building foundation.

It is the owner's responsibility to perform periodic maintenance during hot and dry periods to ensure that adequate watering has been provided to keep soil from separating or pulling back from the foundation. Future owners and property management personnel should be informed and educated regarding the importance of maintaining a constant level of soil-moisture. The owners should be made aware of the potential negative consequences of both excessive watering, as well as allowing potentially expansive soils to become too dry. Expansive soils can undergo shrinkage during drying, and swelling during the rainy winter season, or when irrigation is resumed. This can result in distress to building structures and hardscape improvements. The builder should provide these recommendations to future owners and property management personnel.

4.2.3 Slab Underlayment Guidelines

The following is for informational purposes only since slab underlayment (e.g., moisture retarder, sand or gravel layers for concrete curing and/or capillary break) is unrelated to the geotechnical performance of the foundation and thereby not the purview of the geotechnical consultant. Post-construction moisture migration should be expected below the foundation. The foundation engineer/architect should determine whether the use of a capillary break (sand or gravel layer), in conjunction with the vapor retarder, is necessary or required by code. Sand layer thickness and location (above and/or below vapor retarder) should also be determined by the foundation engineer/architect.

4.3 Soil Bearing and Lateral Resistance

Provided our earthwork recommendations are implemented, an allowable soil bearing pressure of 1,500 pounds per square foot (psf) may be used for the design of footings having a minimum width of 12 inches and minimum embedment of 12 inches below lowest adjacent ground surface. This value may be increased by 300 psf for each additional foot of embedment and 150 psf for each additional foot of foundation width to a maximum value of 2,500 psf. A mat foundation a minimum of 6 inches below lowest adjacent grade may be designed for an allowable soil bearing pressure of 1,200 psf. These allowable bearing pressures are applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Bearing values indicated are for total dead loads and frequently applied live loads and may be increased by $\frac{1}{3}$ for short duration loading (i.e., wind or seismic loads).

In utilizing the above-mentioned allowable bearing capacity and provided our earthwork recommendations are implemented, foundation settlement due to structural loads is anticipated to be 1-inch or less. Differential settlement may be taken as half of the total settlement (i.e., $\frac{1}{2}$ -inch over a horizontal span of 40 feet).

Resistance to lateral loads can be provided by friction acting at the base of foundations and by passive earth pressure. For concrete/soil frictional resistance, an allowable coefficient of friction of 0.25 may be assumed with dead-load forces. An allowable passive lateral earth pressure of 200 psf per foot of depth (or pcf) to a maximum of 2,000 psf may be used for the sides of footings poured against properly compacted fill. Allowable passive pressure may be increased to 265 pcf (maximum of 2,650 psf) for short duration seismic loading. This passive pressure is applicable for level (ground slope equal to or flatter than 5H:1V) conditions only. Frictional resistance and passive pressure may be used in combination without reduction. We recommend that the upper foot of passive resistance be neglected if finished grade will not be covered with concrete or asphalt. The provided allowable passive pressures are based on a factor of safety of 1.5 and 1.1 for static and seismic loading conditions, respectively. The structural designer should incorporate appropriate factors of safety and/or load factors in their design.

4.4 Lateral Earth Pressures and Retaining Wall Design Considerations

The following may be used for design of site retaining walls. Lateral earth pressures are provided as equivalent fluid unit weights, in psf per foot of depth (or pcf). These values do not contain an appreciable factor of safety, so the retaining wall designer should apply the applicable factors of safety and/or load factors during design. A soil unit weight of 120 pcf may be assumed for calculating the actual weight of soil over the wall footing.

The following lateral earth pressures are presented in Table 6 below, for approved imported free draining, clean granular (sandy) soils with a maximum of 35 percent fines (passing the No. 200 sieve per ASTM D-421/422) and a "Very Low" expansion potential (EI of 20 or less per ASTM D4829). The site soils are not suitable for retaining wall backfill due to their fines content and expansion index. Import of soils meeting the criteria outlined above will need to be used for retaining wall backfill soil. The wall designer should clearly indicate on the retaining wall plans the required imported sandy soil backfill criteria. These preliminary findings should be confirmed during grading.

TABLE 6

Lateral Earth Pressures – Approved Imported Sandy Soils

Conditions	Equivalent Fluid Unit Weight (pcf)	Equivalent Fluid Unit Weight (pcf)
	Level Backfill	2:1 Sloped Backfill
	Approved Sandy Soils	Approved Sandy Soils
Active	35	55
At-Rest	55	70

If the wall can yield enough to mobilize the full shear strength of the soil, it can be designed for “active” pressure. If the wall cannot yield under the applied load, the earth pressure will be higher. This would include 90-degree corners of retaining walls. Such walls should be designed for “at-rest.” The equivalent fluid pressure values assume free-draining conditions and a drainage system will be installed and maintained to prevent the build-up of hydrostatic pressures. If conditions other than those assumed above are anticipated, the equivalent fluid pressure values should be provided on an individual-case basis by the geotechnical engineer.

Retaining wall structures should be provided with appropriate drainage and appropriately waterproofed. To reduce, but not eliminate, saturation of near-surface (upper approximate 1-foot) soils in front of the retaining walls, the perforated subdrain pipe should be located as low as possible behind the retaining wall. The outlet pipe should be sloped to drain to a suitable outlet. In general, we do not recommend retaining wall outlet pipes be connected to area drains. If subdrains are connected to area drains, special care should be taken to maintain these drains. Typical conventional retaining wall drainage is shown on Figure 3. It should be noted that the recommended subdrain does not provide protection against seepage through the face of the wall and/or efflorescence. Waterproofing and outlet systems are not the purview of the geotechnical consultant.

Surcharge loading effects from any adjacent structures should be evaluated by the retaining wall designer. In general, structural loads within a 1:1 (horizontal to vertical) upward projection from the bottom of the proposed retaining wall footing will surcharge the proposed retaining wall. In addition to the recommended earth pressure, retaining walls adjacent to streets should be designed to resist a uniform lateral pressure of 85 pounds per square foot (psf) due to normal street vehicle traffic, if applicable. Uniform lateral surcharges may be estimated using the applicable coefficient of lateral earth pressure using a rectangular distribution. A factor of 0.45 and 0.3 may be used for at-rest and active conditions, respectively. The retaining wall designer should contact the geotechnical consultant for any required geotechnical input in estimating surcharge loads.

If retaining walls greater than 6 feet in height are proposed, the retaining wall designer should contact the geotechnical engineer for specific seismic lateral earth pressure increments based on the configuration of the planned retaining wall structures.

Soil bearing and lateral resistance (friction coefficient and passive resistance) are provided in

Section 4.3. Earthwork considerations (temporary backcuts, backfill, compaction, etc.) for retaining walls are provided in Section 4.1 (Site Earthwork) and the subsequent earthwork related sub-sections.

4.5 Corrosivity to Concrete and Metal

Although not corrosion engineers (LGC Geotechnical is not a corrosion consultant), several governing agencies in Southern California require the geotechnical consultant to determine the corrosion potential of soils to buried concrete and metal facilities. We therefore present the results of our testing with regard to corrosion for the use of the client and other consultants, as they determine necessary.

Corrosion testing of near-surface bulk samples indicated a soluble sulfate content value of 95 ppm (less than 0.01 percent), a chloride content of 60 ppm, pH of 7.90, and a minimum resistivity of 720 ohm-centimeters. Based on Caltrans Corrosion Guidelines (2021), soils are considered corrosive if the pH is 5.5 or less, or the chloride concentration is 500 ppm or greater, or the sulfate concentration is 2,000 ppm (0.2 percent) or greater. Based on the test results, soils are not considered corrosive using Caltrans criteria. Note that based on minimum resistivity the soils are considered severely corrosive to metallic improvements. If improvements that may be susceptible to corrosion are proposed, it is recommended that further evaluation by a corrosion engineer be performed.

Based on our laboratory test results of representative site soil samples and our experience, onsite soils should be considered as having a severity categorization of “moderate” and are designated class “S1” per ACI 318, Table 19.3.1.1 with respect to sulfates. Concrete in direct contact with the onsite soils can be designed according to ACI 318, Table 19.3.2.1 using the “S1” sulfate classification.

Laboratory testing may need to be performed at the completion of grading by the project corrosion engineer to further evaluate the as-graded soil corrosivity characteristics. Accordingly, revision of the corrosion potential may be needed, should future test results differ substantially from the conditions reported herein. The client and/or other members of the development team should consider this during the design and planning phase of the project and formulate an appropriate course of action.

4.6 Preliminary Asphalt Concrete Pavement Sections

For the purposes of these preliminary recommendations, we have selected a preliminary design R-value of 5 and calculated pavement sections for Traffic Indices of 5.5, 6.0 and 6.5. R-value testing of the street subgrade will need to be performed to confirm our preliminary testing results/assumptions once the streets have been graded to finish subgrade elevations and the final Traffic Index is determined by the Civil Engineer or City Engineer. We are not responsible for selecting a design Traffic Index. It is our understanding that the City of Irvine requires a minimum pavement section of 4.2 inches of asphalt over 6 inches of base.

TABLE 7

Preliminary Pavement Sections

Assumed Traffic Index	5.5	6.0	6.5
R -Value Subgrade	5	5	5
AC Thickness	4.2 inches	4.2 inches	5.0 inches
AB Thickness	10.0 inches	12.5 inches	13.0 inches

Due to anticipated construction traffic prior to the completion of the project, we recommend that the total thickness (base course and capping course) of AC be placed at essentially the same time. Construction traffic loading on only the base course of the AC will increase the potential for pavement distress. It should be noted that construction traffic such as concrete trucks will likely exceed traffic loading after completion of construction.

Increasing the thickness of asphalt or adding additional base material will reduce the likelihood of the pavement experiencing distress during its service life. The above recommendations are based on the assumption that proper maintenance and irrigation of the areas adjacent to the roadway will occur through the design life of the pavement. Failure to maintain a proper maintenance and/or irrigation program may jeopardize the integrity of the pavement.

Earthwork recommendations regarding aggregate base and subgrade are provided in the previous Section "Site Earthwork" and the related sub-sections of this report.

4.7 Nonstructural Concrete Flatwork

Nonstructural concrete flatwork (such as walkways, private drives, patio slabs, etc.) has a potential for cracking due to changes in soil volume related to soil-moisture fluctuations. To reduce the potential for excessive cracking and lifting, concrete may be designed in accordance with the minimum guidelines outlined in Table 8 on the following page. These guidelines will reduce the potential for irregular cracking and promote cracking along construction joints but will not eliminate all cracking or lifting. Thickening the concrete and/or adding additional reinforcement will further reduce cosmetic distress.

TABLE 8

Nonstructural Concrete Flatwork Guidelines

	Community Sidewalks (≤6 feet wide)	Private Drives	Patios/Entryways / Walkways (adjacent to homes or flatwork >6 feet wide)	City Sidewalk Curb and Gutters
Minimum Thickness (in.)	4 (nominal)	5 (full)	5 (full)	City/Agency Standard
Presaturation	140% of optimum m/c to 12 inches	140% of optimum m/c to 12 inches	140% of optimum m/c to 24 inches	City/Agency Standard
Reinforcement	—	No. 3 at 24 inches on centers	No. 3 at 24 inches on centers	City/Agency Standard
Thickened Edge (in.)	—	8 x 8	—	City/Agency Standard
Crack Control Joints	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	Saw cut or deep open tool joint to a minimum of 1/3 the concrete thickness	City/Agency Standard
Maximum Joint Spacing	5 feet	10 feet or quarter cut whichever is closer	6 feet	City/Agency Standard

To reduce the potential for driveways to separate from the garage slab, the builder may elect to install dowels to tie these two elements together. Similarly, future homeowners should consider the use of dowels to connect flatwork to the foundation.

4.8 Subsurface Water Infiltration

Recent regulatory changes have occurred that mandate that storm water be infiltrated below grade into subsurface soils rather than collected in a conventional storm drain system. Typically, a combination of methods are implemented to reduce surface water runoff and increase infiltration including; permeable pavements/pavers for roadways and walkways, directing surface water runoff to grass-lined swales, retention areas, and/or drywells, etc.

It should be noted that collecting and concentrating surface water for the purpose of intentionally infiltrating below grade, conflicts with the geotechnical engineering objective of directing surface water away from slopes, structures and other improvements. The geotechnical stability and integrity of a site is reliant upon appropriately handling surface water. In general, the vast majority of geotechnical distress issues are directly related to improper drainage. In general, distress in the form of movement of improvements could occur as a result of soil

saturation and loss of soil support, expansion, internal soil erosion, collapse and/or settlement. The results of our field infiltration testing indicate the observed 1-D infiltration rate for I-1 and I-2 (not including required factors of safety for design) was 0.01 to 0.03 inches per hour. The design infiltration rate is thereby equal to the Observed Infiltration Rate provided in Table 1 (inches per hour) divided by the design factor of safety. The design factor of safety must be a minimum of 2.0 but may be increased at the discretion of the design engineer (County of Orange, 2013). Per the County of Orange infiltration guidelines (2013), infiltration of stormwater is not required when the factored infiltration rate (measured infiltration rate with safety factors applied) is less than 0.3 inches per hour in the vicinity of the BMPs.

Based on the results of field infiltration testing indicating essentially zero infiltration and soils with high fines content (silts and clays), we strongly recommend against the intentional infiltration of stormwater into the subsurface soils.

4.9 Control of Surface Water and Drainage Control

From a geotechnical perspective, we recommend that compacted finished grade soils adjacent to proposed structures be sloped away from the proposed structures and towards an approved drainage device or unobstructed swale. Drainage swales, wherever feasible, should not be constructed within 5 feet of buildings. Where lot and building geometry necessitates that drainage swales be routed closer than 5 feet to structural foundations, we recommend the use of area drains together with drainage swales. Drainage swales used in conjunction with area drains should be designed by the project civil engineer so that a properly constructed and maintained system will prevent ponding within 5 feet of the foundation. Code compliance of grades is not the purview of the geotechnical consultant.

Planters with open bottoms adjacent to buildings should be avoided. Planters should not be designed adjacent to buildings unless provisions for drainage, such as catch basins, liners, and/or area drains, are made. Overwatering must be avoided.

4.10 Geotechnical Plan Review

Project plans (grading, foundation, retaining wall, etc.) should be reviewed by this office prior to construction to verify that our geotechnical recommendations have been incorporated. Additional or modified geotechnical recommendations may be required based on the proposed layout.

4.11 Geotechnical Observation and Testing

The recommendations provided in this report are based on limited subsurface observations and geotechnical analysis. The interpolated subsurface conditions should be checked in the field during construction by a representative of LGC Geotechnical. Geotechnical observation and testing is required per Section 1705 of the 2022 California Building Code (CBC).

Geotechnical observation and/or testing should be performed by LGC Geotechnical at the

following stages:

- During grading (removal bottoms, fill placement, etc.);
- During retaining wall backfill and compaction;
- During utility trench backfill and compaction;
- After presoaking building pad and other concrete-flatwork subgrades, and prior to placement of aggregate base or concrete;
- Preparation of pavement subgrade and placement of aggregate base;
- After building and wall footing excavation and prior to placement of steel reinforcement and/or concrete; and
- When any unusual soil conditions are encountered during any construction operation subsequent to issuance of this report.

5.0 LIMITATIONS

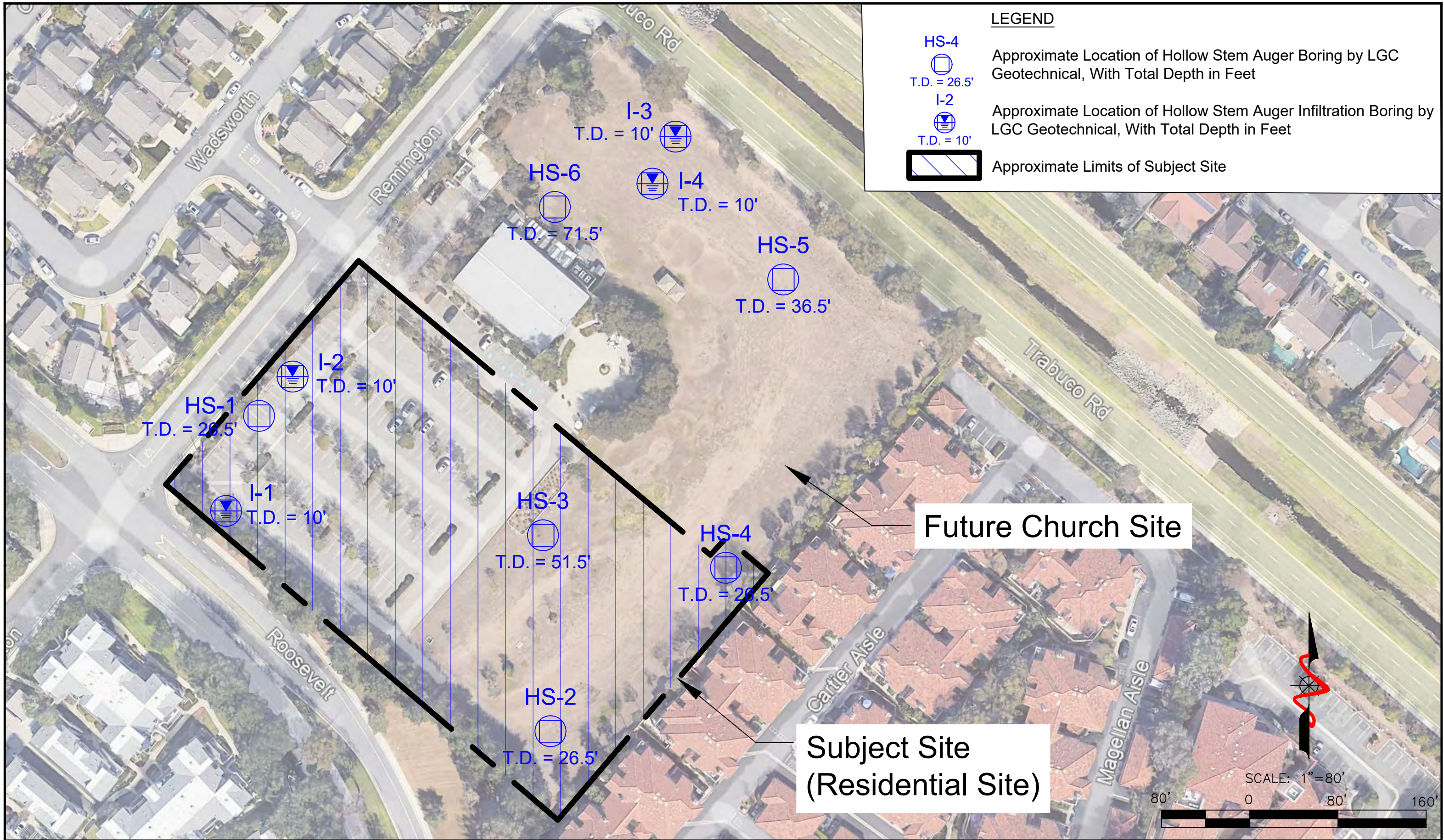
Our services were performed using the degree of care and skill ordinarily exercised, under similar circumstances, by reputable soils engineers and geologists practicing in this or similar localities. No other warranty, expressed or implied, is made as to the conclusions and professional advice included in this report.

This report is based on data obtained from limited observations of the site, which have been extrapolated to characterize the site. While the scope of services performed is considered suitable to adequately characterize the site geotechnical conditions relative to the proposed development, no practical evaluation can completely eliminate uncertainty regarding the anticipated geotechnical conditions in connection with a subject site. Variations may exist and conditions not observed or described in this report may be encountered during grading and construction.

This report is issued with the understanding that it is the responsibility of the owner, or of his/her representative, to ensure that the information and recommendations contained herein are brought to the attention of the other consultants (at a minimum the civil engineer, structural engineer, landscape architect) and incorporated into their plans. The contractor should properly implement the recommendations during construction and notify the owner if they consider any of the recommendations presented herein to be unsafe, or unsuitable.

The findings of this report are valid as of the present date. However, changes in the conditions of a site can and do occur with the passage of time, whether they be due to natural processes or the works of man on this or adjacent properties. The findings, conclusions, and recommendations presented in this report can be relied upon only if LGC Geotechnical has the opportunity to observe the subsurface conditions during grading and construction of the project, in order to confirm that our preliminary findings are representative for the site. This report is intended exclusively for use by the client, any use of or reliance on this report by a third party shall be at such party's sole risk.

In addition, changes in applicable or appropriate standards may occur, whether they result from legislation or the broadening of knowledge. Accordingly, the findings of this report may be invalidated wholly or partially by changes outside our control. Therefore, this report is subject to review and modification.



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FIGURE 2
Boring Location Map

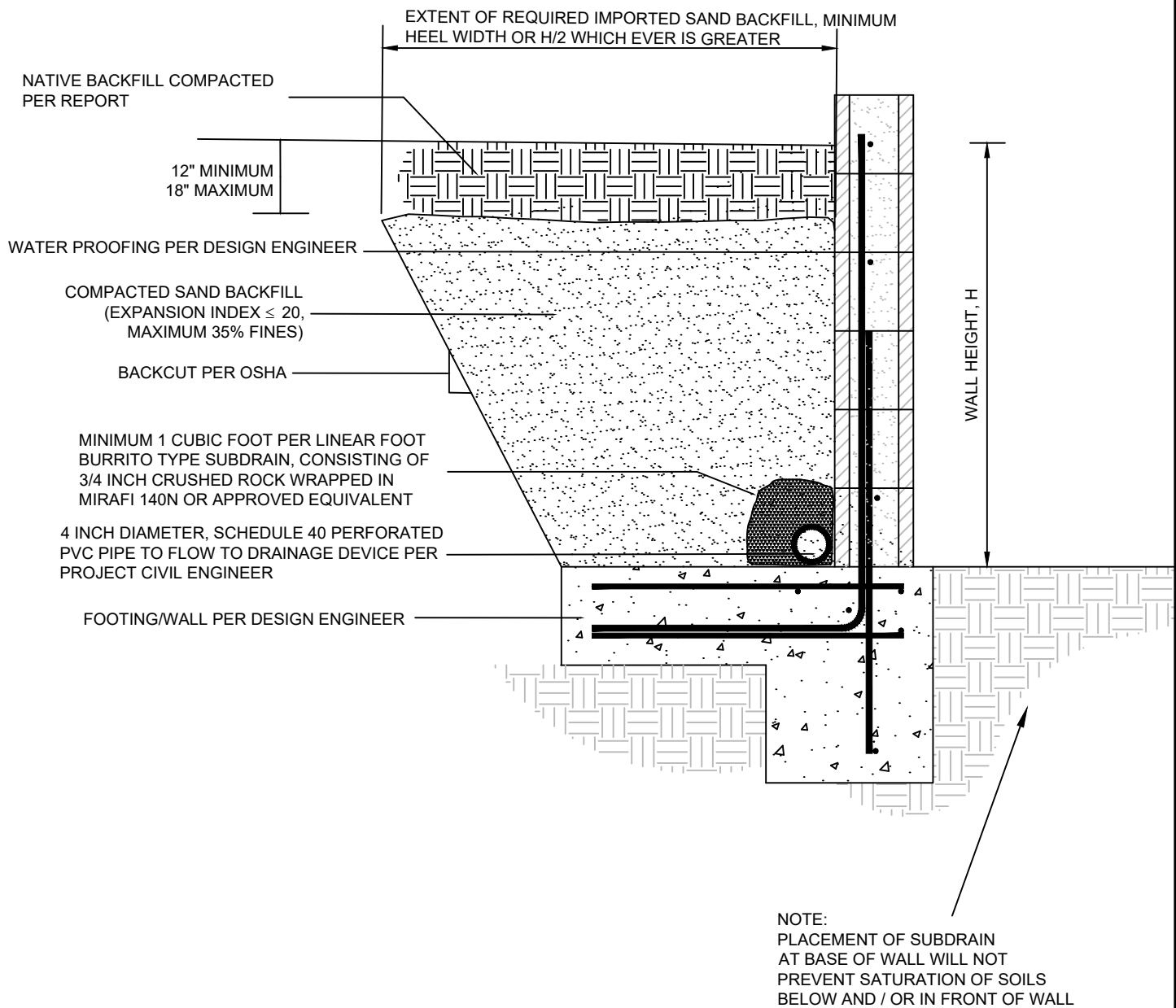


FIGURE 3
Retaining Wall
Backfill Detail

PROJECT NAME	Our Lady of Peace, Irvine
PROJECT NO.	23174-01
ENG. / GEOL.	DJB
SCALE	Not to Scale
DATE	May 2024

Appendix A

References

APPENDIX A

References

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Appendix B

Boring Logs

Geotechnical Boring Log Borehole HS-1

Date: 2/22/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~154' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
150	0							@ 0' - 3" of Asphalt over 7" of Base	
								Young Axial Channel Deposits (Qya):	
			R-1	4 8 17	103.5	19.3	CL	@ 2.5' - Sandy CLAY: brown, very moist, very stiff	
145	5		R-2	10 13 14	95.8	15.7	SC	@ 5' - Clayey SAND: brown, very moist, medium dense	
			R-3	16 24 25	91.5	16.1		@ 7.5' - Clayey SAND: brown, very moist, dense	
140	10		R-4	9 10 10	90.1	23.0		@ 10' - Clayey SAND: brown, very moist, medium dense	
			SPT-1	5 11 14		10.3		@ 15' - Clayey SAND: brown, moist, dense	
135	20		R-5	10 14 14	101.9	13.6		@ 20' - Clayey SAND: reddish brown, very moist, medium dense	
130	25		SPT-2	4 6 8		18.0		@ 25' - Clayey SAND: brown, very moist, medium dense	
125	30							Total Depth = 26.5' No Groundwater Encountered Backfilled with Cuttings and Capped with Cold Patch on 2/22/24	



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-2

Date: 2/22/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~158' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
155	0		R-1	4 10 24	99.8	19.0	CL	@0' - Grass Young Axial Channel Deposits (Qya): @ 2.5' - Sandy CLAY: brown, very moist, very stiff	
150	5		R-2	16 20 20	92.7	11.8	SC	@ 5' - Clayey SAND: brown, moist, dense	
145	10		R-3	16 20 23	94.7	10.2		@ 7.5' - Clayey SAND: brown, moist, dense	
140	15		R-4	11 11 15	89.7	9.1	SM	@ 10' - Silty SAND: light brown, moist, medium dense	
135	20		R-5	7 10 12	103.4	1.1	SP-SM	@ 15' - SAND with Silt to Silty SAND: light reddish brown, dry, medium dense	CO
130	25		SPT-1	5 9 14		16.1	CL	@ 20' - Sandy CLAY: brown, moist, very stiff	
125	30		R-6	6 7 9	90.6	21.8	SC	@ 25' - Clayey SAND: brown, very moist, medium dense	
								Total Depth = 26.5' No Groundwater Encountered Backfilled with Cuttings on 2/22/24	



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-3

Date: 2/22/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~157' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
155	0							@0' - Grass	MD CR
								Young Axial Channel Deposits (Qya):	
			R-1	4 10 17	96.0	14.7	SC	@ 2.5' - Clayey SAND: brown, very moist, medium dense	
150	5		R-2	17 19 19	82.1	11.9		@ 5' - Clayey SAND: brown, moist, dense	
			R-3	14 18 22	97.2	10.0		@ 7.5' - Clayey SAND: brown, moist, dense	
145	10		R-4	19 20 25	92.2	9.0		@ 10' - Clayey SAND: light brown, moist, dense	
140	15		SPT-1	4 5 4		11.2		@ 15' - Clayey SAND: brown, moist, medium dense	
135	20		R-5	7 11 11	95.2	15.4		@ 20' - Clayey SAND: light brown, very moist, medium dense	
130	25		SPT-2	3 4 5		9.5		@ 25' - Clayey SAND: brown, moist, medium dense	
	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE



TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-3

Date: 2/22/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~157' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 2 of 2

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
125	30		R-6	8 12 14	95.9	7.8	SC	@ 30' - Clayey SAND: pale brown, moist, medium dense	
120	35		SPT-3	4 4 5		12.3	SM	@ 35' - Silty SAND: brown, moist, medium dense	
115	40		R-7	9 16 20	105.6	10.1		@ 40' - Silty SAND: brown, moist, medium dense	
110	45		SPT-4	6 7 7		7.3		@ 45' - Silty SAND: brown, moist, medium dense	
105	50		R-8	9 9 24	99.6	23.6	CL	@ 50' - Sandy CLAY: brown, very moist, very stiff	
100	55							Total Depth = 51.5' No Groundwater Encountered Backfilled with Cuttings on 2/22/24	
60									



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

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 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 -#200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole HS-4

Date: 2/23/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~160' MSL (google)	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
	0							@0' - Grass	
			R-1	3 6 12	98.0	13.7	CL	Young Axial Channel Deposits (Qya): @ 2.5' - Sandy CLAY: brown, moist, stiff	
155	5		R-2	10 10 13	79.7	11.5	SC	@ 5' - Clayey SAND: brown, moist, medium dense	
			R-3	17 16 14	92.1	12.2		@ 7.5' - Clayey SAND: brown, moist, medium dense	
150	10		R-4	15 16 22	84.4	12.8	CL	@ 10' - Sandy CLAY: brown, moist, hard	
145	15		R-5	6 7 11	86.4	14.2	ML	@ 15' - Sandy SILT: light brown, moist, stiff	
140	20		SPT-1	4 7 8		10.2	SC	@ 20' - Clayey SAND: brown, moist, medium dense	
135	25		R-6	4 8 9	88.9	8.4	SM	@ 25' - Silty SAND: reddish brown, moist, medium dense	
130	30							Total Depth = 26.5' No Groundwater Encountered Backfilled with Cuttings on 2/23/24	



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE



TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole I-1

Date: 2/22/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~152' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
150	0		R-1	10 12 17	89.9	15.9	SC	@0' - 5" of Asphalt over 5.5" of Base Young Axial Channel Deposits (Qya): @ 2.5' - Clayey SAND: brown, very moist, medium dense	
145	5		R-2	13 15 17	103.1	15.7	CL	@ 5' - Sandy CLAY: dark brown, moist, very stiff	
140	10		R-3	10 15 18	102.0	10.6	SC	@ 8.5' - Clayey SAND: brown, moist, medium dense.	#200
135	15							Total Depth = 10' No Groundwater Encountered 3" Perforated Pipe with Filter Sock and Gravel Installed Pipe Removed, Backfilled with Cuttings and Capped with Cold Patch on 2/26/2024	
130	20								
125	25								
120	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE

GROUNDWATER TABLE

TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 #200 % PASSING # 200 SIEVE

Geotechnical Boring Log Borehole I-2

Date: 2/22/24	Drilling Company: 2R Drilling
Project Name: Our Lady of Peace, Irvine	Type of Rig: Limited Access Rig
Project Number: 23174-01	Drop: 30" Hole Diameter: 8"
Elevation of Top of Hole: ~155' MSL	Drive Weight: 140 pounds
Hole Location: See Geotechnical Map	Page 1 of 1

Elevation (ft)	Depth (ft)	Graphic Log	Sample Number	Blow Count	Dry Density (pcf)	Moisture (%)	USCS Symbol	Logged By RNP Sampled By RNP Checked By BPP DESCRIPTION	Type of Test
150	0		R-1	4 8 13	107.3	20.4	CL	@0' - 4" of Asphalt over 8.5" of Base Young Axial Channel Deposits (Qya): @ 2.5' - Sandy CLAY: dark brown, very moist, very stiff	
145	5		R-2	6 10 13	94.1	16.5	SC	@ 5' - Clayey SAND: brown, very moist, medium dense	
145	10		R-3	8 14 18	96.2	15.3		@ 8.5' - Clayey SAND: brown, very moist, medium dense	
140	15							Total Depth = 10' No Groundwater Encountered 3" Perforated Pipe with Filter Sock and Gravel installed Pipe Removed, Backfilled with Cuttings and Capped with Cold Patch on 2/26/2024	
135	20								
130	25								
125	30								



THIS SUMMARY APPLIES ONLY AT THE LOCATION OF THIS BORING AND AT THE TIME OF DRILLING. SUBSURFACE CONDITIONS MAY DIFFER AT OTHER LOCATIONS AND MAY CHANGE AT THIS LOCATION WITH THE PASSAGE OF TIME. THE DATA PRESENTED IS A SIMPLIFICATION OF THE ACTUAL CONDITIONS ENCOUNTERED. THE DESCRIPTIONS PROVIDED ARE QUALITATIVE FIELD DESCRIPTIONS AND ARE NOT BASED ON QUANTITATIVE ENGINEERING ANALYSIS.

SAMPLE TYPES:
 B BULK SAMPLE
 R RING SAMPLE (CA Modified Sampler)
 G GRAB SAMPLE
 SPT STANDARD PENETRATION TEST SAMPLE



TEST TYPES:
 DS DIRECT SHEAR
 MD MAXIMUM DENSITY
 SA SIEVE ANALYSIS
 S&H SIEVE AND HYDROMETER
 EI EXPANSION INDEX
 CN CONSOLIDATION
 CR CORROSION
 AL ATTERBERG LIMITS
 CO COLLAPSE/SWELL
 RV R-VALUE
 -#200 % PASSING # 200 SIEVE

Appendix C
Laboratory Test Results

APPENDIX C

Laboratory Testing Procedures and Test Results

The laboratory testing program was formulated towards providing data relating to the relevant engineering properties of the soils with respect to residential construction. Samples considered representative of site conditions were tested in general accordance with American Society for Testing and Materials (ASTM) procedure and/or California Test Methods (CTM), where applicable. The following summary is a brief outline of the test type and a table summarizing the test results.

Moisture and Density Determination Tests: Moisture content (ASTM D2216) and dry density determinations (ASTM D2937) were performed on relatively undisturbed samples obtained from the test borings. The results of these tests are presented in the boring logs. Where applicable, only moisture content was determined from undisturbed or disturbed samples.

Grain Size Distribution/Fines Content: Representative samples were dried, weighed and soaked in water until individual soil particles were separated (per ASTM D421) and then washed on a No. 200 sieve (ASTM D1140). Where applicable, the portion retained on the No. 200 sieve and dried and then sieved on a U.S. Standard brass sieve set in accordance with ASTM D6913 (sieve).

Sample Location	Description	% Passing # 200 Sieve
I-1 @ 8.5 feet	Clayey Sand	48
I-3 @ 8.5 feet	Sandy Clay	68

Expansion Index: The expansion potential of selected samples was evaluated by the Expansion Index Test, Standard ASTM D4829. Specimens are molded under a given compactive energy to approximately the optimum moisture content and approximately 50 percent saturation or approximately 90 percent relative compaction. The prepared 1-inch-thick by 4-inch-diameter specimens are loaded to an equivalent 144 psf surcharge and are inundated with tap water until volumetric equilibrium is reached. The results of these tests are presented in the table below.

Sample Location	Expansion Index	Expansion Potential*
HS-3 @ 1-5 feet	112	High
HS-6 @ 1-5 feet	135	Very High

* ASTM D4829

Maximum Density Tests: The maximum dry density and optimum moisture content of typical materials were determined in accordance with ASTM D1557. The results of these tests are presented in the table below:

APPENDIX C (Cont'd)

Laboratory Testing Procedures and Test Results

Sample Location	Sample Description	Maximum Dry Density (pcf)	Optimum Moisture Content (%)
HS-3 @ 1-5 feet	Dark Grayish Brown Clay	117.5	12.5
HS-6 @ 1-5 feet	Dark Brown Sandy Clay	115.0	14.0

Collapse/Swell Potential: Six collapse tests were performed per ASTM D4546. A sample (2.4 inches in diameter and 1-inch in height) was placed in a consolidometer and loaded to the approximate in-situ effective stress. The curve is presented in this Appendix.

Chloride Content: Chloride content was tested in accordance with Caltrans Test Method (CTM) 422. The results are presented below.

Sample Location	Chloride Content, ppm
HS-3 @ 1-5 feet	60

Soluble Sulfates: The soluble sulfate contents of selected samples were determined by standard geochemical methods (CTM 417). The soluble sulfate content is used to determine the appropriate cement type and maximum water-cement ratios. The test results are presented in the table below.

Sample Location	Sulfate Content (ppm)	Sulfate Exposure Class *
HS-3 @ 1-5 feet	95	S0

*Based on ACI 318R-14, Table 19.3.1.1

Minimum Resistivity and pH Tests: Minimum resistivity and pH tests were performed in general accordance with CTM 643 and standard geochemical methods. The results are presented in the table below.

Sample Location	pH	Minimum Resistivity (ohms-cm)
HS-3 @ 1-5 feet	7.90	720

ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-1
 Sample No.: R-4
 Sample Description: Brown lean clay (CL)

Tested By: G. Bathala Date: 05/20/24
 Checked By: J. Ward Date: 05/22/24
 Sample Type: Ring
 Depth (ft.): 10.0

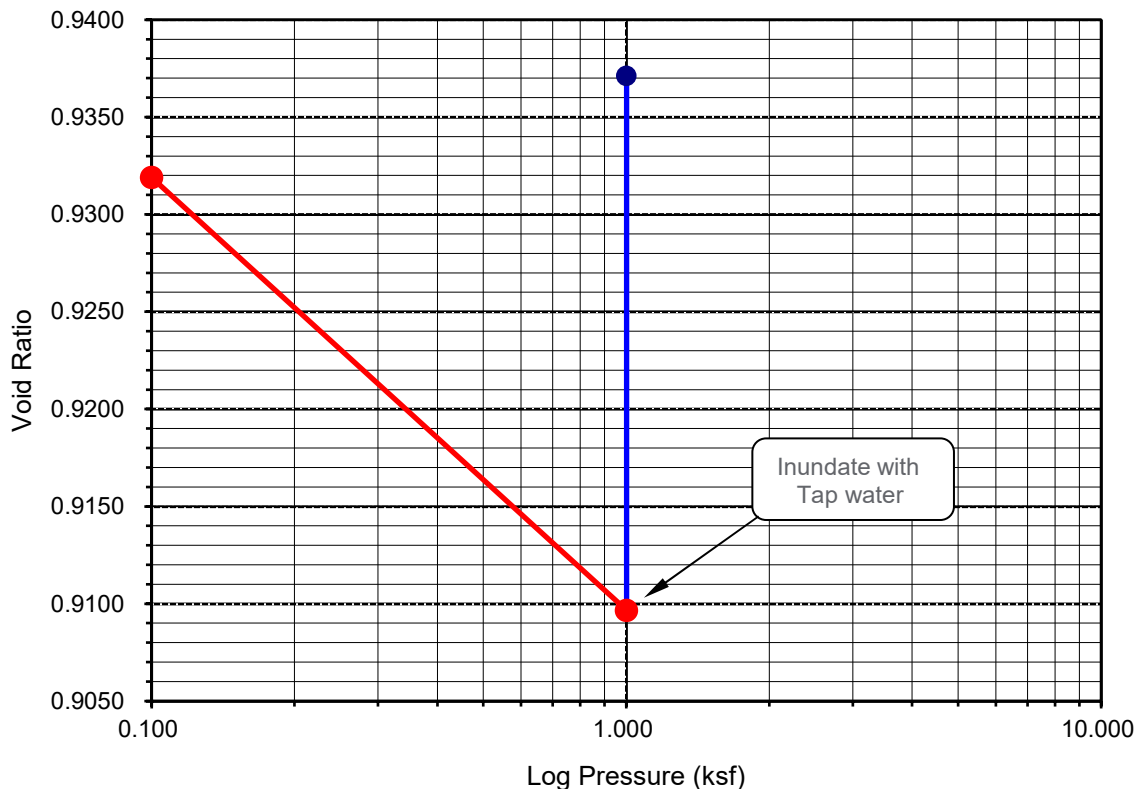
Initial Dry Density (pcf):	87.2
Initial Moisture (%):	22.94
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1187
Diameter(in):	2.415

Final Dry Density (pcf):	87.3
Final Moisture (%) :	31.6
Initial Void ratio:	0.9335
Specific Gravity(assumed):	2.70
Initial Saturation (%)	66.4

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1195	0.9992	0.00	-0.08	0.9319	-0.08
1.000	0.1325	0.9862	0.15	-1.38	0.9097	-1.23
H2O	0.1183	1.0004	0.15	0.04	0.9371	0.19

Percent Swell (+) / Settlement (-) After Inundation = 1.44

Void Ratio - Log Pressure Curve





**ONE-DIMENSIONAL SWELL OR SETTLEMENT
POTENTIAL OF COHESIVE SOILS
ASTM D 4546**

Project Name: Shea - Our Lady of Peace, Irvine

Project No.: 23174-01

Boring No.: HS-2

Sample No.: R-4

Sample Description: Brown silty clay (CL-ML)

Tested By: G. Bathala

Date: 05/21/24

Checked By: J. Ward

Date: 05/23/24

Sample Type: Ring

Depth (ft.): 10.0

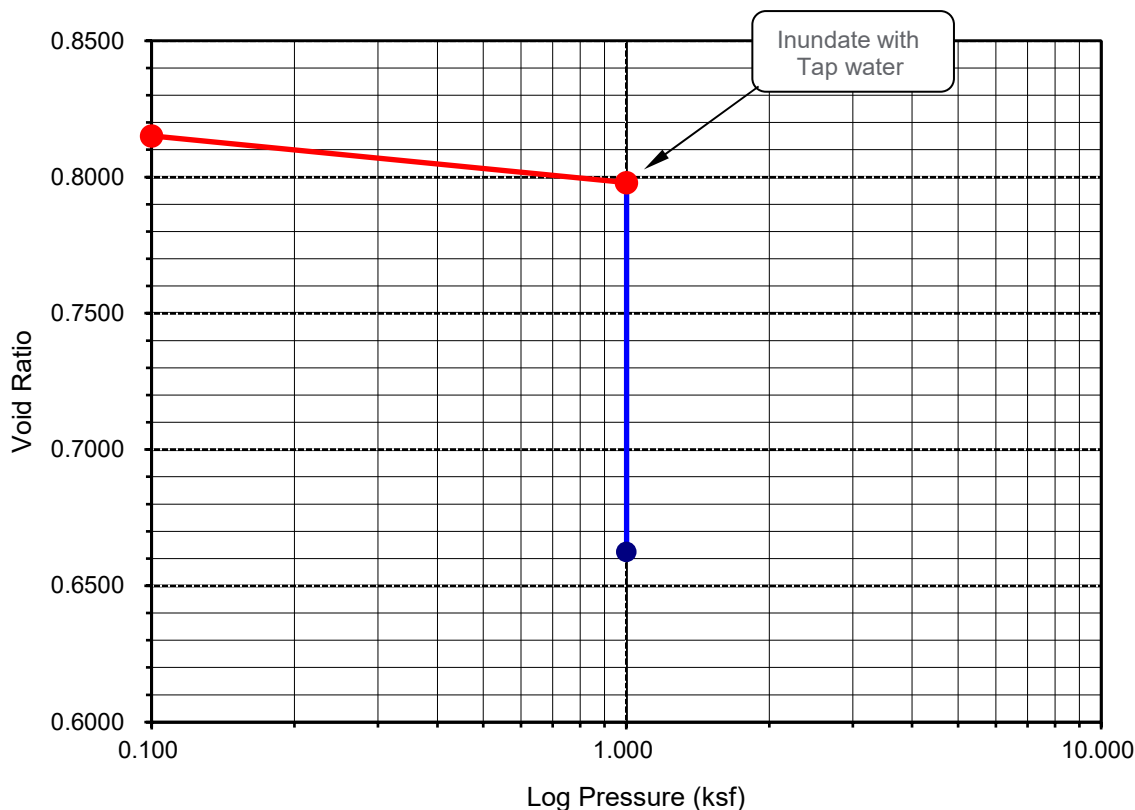
Initial Dry Density (pcf):	92.3
Initial Moisture (%):	7.54
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1122
Diameter(in):	2.415

Final Dry Density (pcf):	101.7
Final Moisture (%) :	20.8
Initial Void ratio:	0.8270
Specific Gravity(assumed):	2.70
Initial Saturation (%)	24.6

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1187	0.9935	0.00	-0.65	0.8151	-0.65
1.000	0.1296	0.9826	0.15	-1.74	0.7980	-1.59
H2O	0.2038	0.9084	0.15	-9.16	0.6624	-9.01

Percent Swell (+) / Settlement (-) After Inundation = -7.54

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-2
 Sample No.: R-5
 Sample Description: Brown silty sand (SM)

Tested By: G. Bathala Date: 03/13/24
 Checked By: J. Ward Date: 03/21/24
 Sample Type: Ring
 Depth (ft.): 15.0

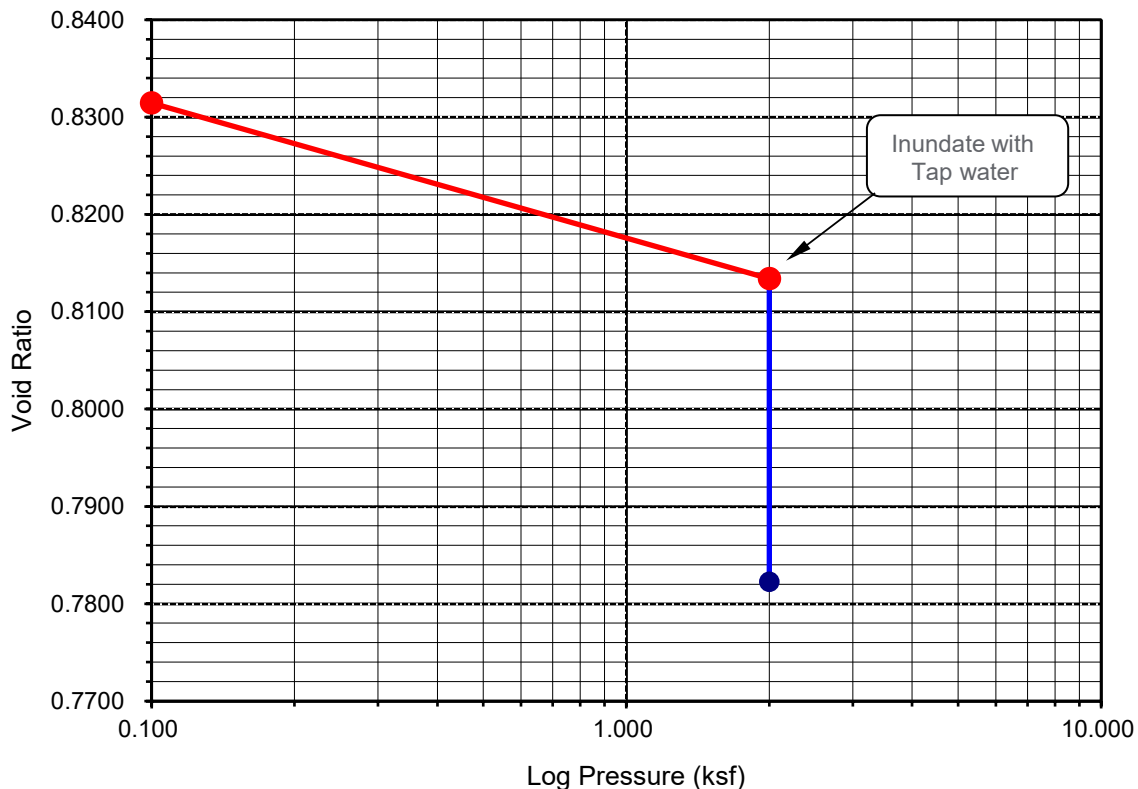
Initial Dry Density (pcf):	92.0
Initial Moisture (%):	8.87
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0680
Diameter(in):	2.415

Final Dry Density (pcf):	95.9
Final Moisture (%) :	22.0
Initial Void ratio:	0.8325
Specific Gravity(assumed):	2.70
Initial Saturation (%)	28.8

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.06855	0.9995	0.00	-0.06	0.8315	-0.06
2.000	0.0849	0.9831	0.65	-1.69	0.8134	-1.04
H2O	0.1019	0.9661	0.65	-3.39	0.7823	-2.74

Percent Swell (+) / Settlement (-) After Inundation = -1.72

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-3
 Sample No.: R-4
 Sample Description: Brown lean clay with sand (CL)s

Tested By: G. Bathala Date: 05/20/24
 Checked By: J. Ward Date: 05/22/24
 Sample Type: Ring
 Depth (ft.): 10.0

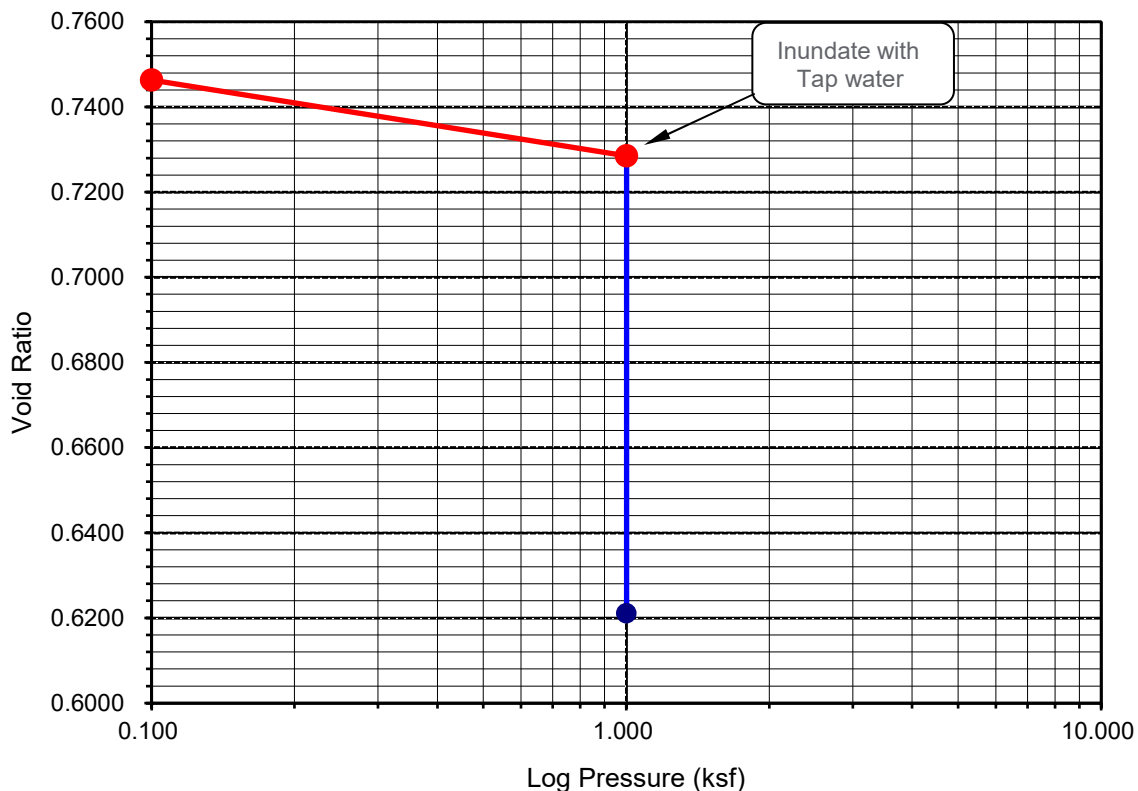
Initial Dry Density (pcf):	96.5
Initial Moisture (%):	5.37
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0967
Diameter(in):	2.415

Final Dry Density (pcf):	104.3
Final Moisture (%) :	19.1
Initial Void ratio:	0.7469
Specific Gravity(assumed):	2.70
Initial Saturation (%)	19.4

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.0970	0.9997	0.00	-0.03	0.7464	-0.03
1.000	0.1087	0.9880	0.15	-1.20	0.7285	-1.05
H2O	0.1702	0.9265	0.15	-7.35	0.6211	-7.20

Percent Swell (+) / Settlement (-) After Inundation = -6.22

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-4
 Sample No.: R-4
 Sample Description: Brown lean clay (CL)

Tested By: G. Bathala Date: 05/21/24
 Checked By: J. Ward Date: 05/23/24
 Sample Type: Ring
 Depth (ft.): 10.0

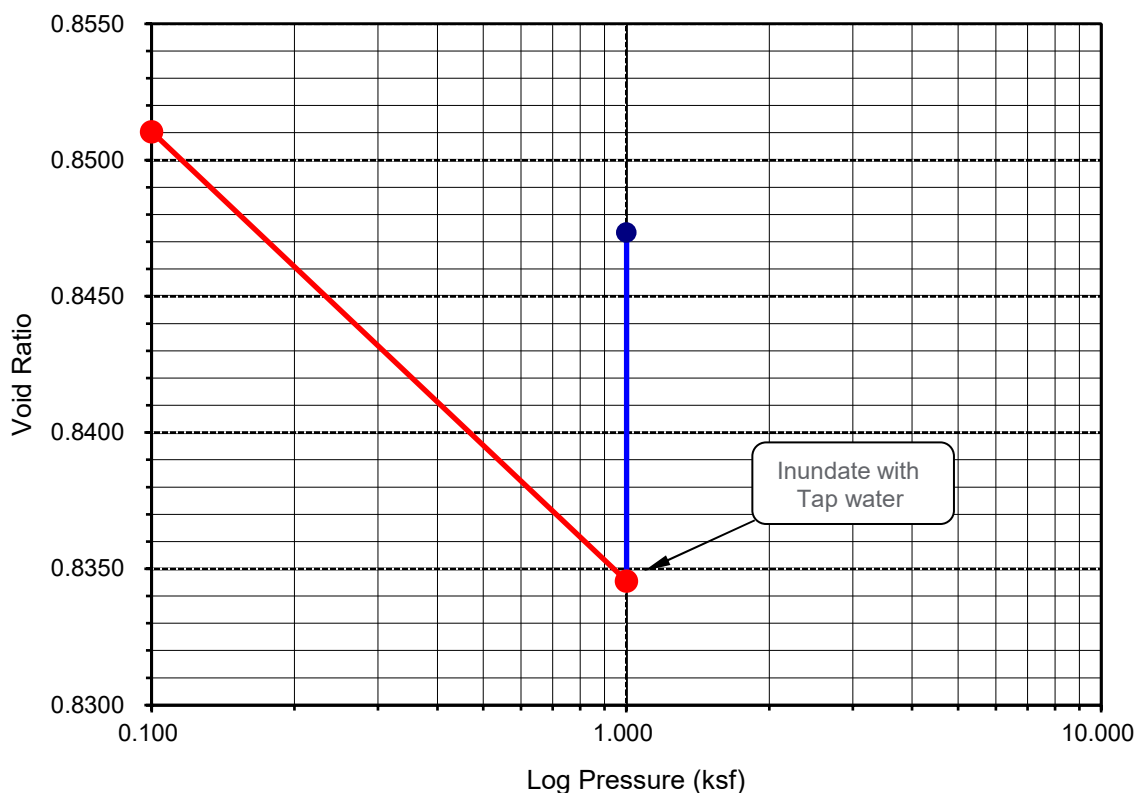
Initial Dry Density (pcf):	91.0
Initial Moisture (%):	13.63
Initial Length (in.):	1.0000
Initial Dial Reading:	0.0961
Diameter(in):	2.415

Final Dry Density (pcf):	91.5
Final Moisture (%) :	24.3
Initial Void ratio:	0.8522
Specific Gravity(assumed):	2.70
Initial Saturation (%)	43.2

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.0967	0.9994	0.00	-0.06	0.8510	-0.06
1.000	0.1071	0.9890	0.15	-1.10	0.8346	-0.95
H2O	0.1002	0.9959	0.15	-0.41	0.8473	-0.26

Percent Swell (+) / Settlement (-) After Inundation = 0.70

Void Ratio - Log Pressure Curve



ONE-DIMENSIONAL SWELL OR SETTLEMENT POTENTIAL OF COHESIVE SOILS ASTM D 4546

Project Name: Shea - Our Lady of Peace, Irvine
 Project No.: 23174-01
 Boring No.: HS-5
 Sample No.: R-4
 Sample Description: Olive brown silty clay (CL-ML)

Tested By: G. Bathala Date: 03/13/24
 Checked By: J. Ward Date: 03/21/24
 Sample Type: Ring
 Depth (ft.): 10.0

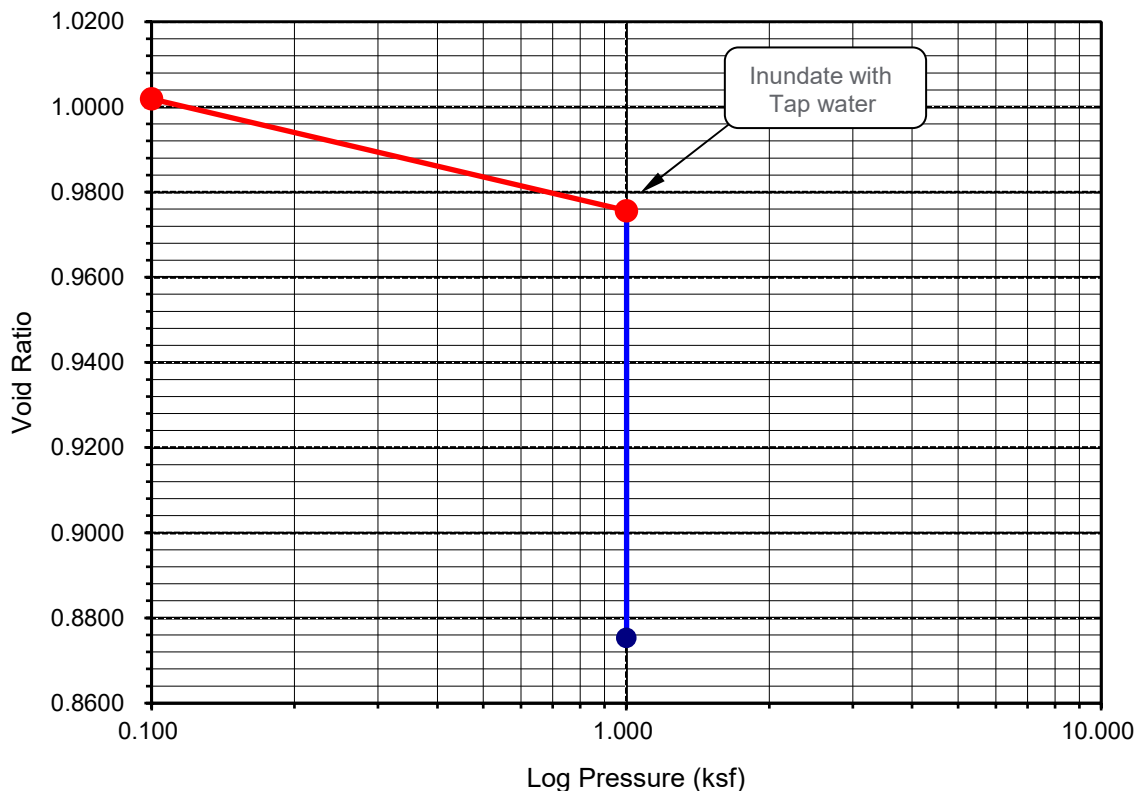
Initial Dry Density (pcf):	84.2
Initial Moisture (%):	12.07
Initial Length (in.):	1.0000
Initial Dial Reading:	0.1519
Diameter(in):	2.415

Final Dry Density (pcf):	90.2
Final Moisture (%) :	25.5
Initial Void ratio:	1.0029
Specific Gravity(assumed):	2.70
Initial Saturation (%)	32.5

Pressure (p) (ksf)	Final Reading (in)	Apparent Thickness (in)	Load Compliance (%)	Swell (+) Settlement (-) % of Sample Thickness	Void Ratio	Corrected Deformation (%)
0.100	0.1524	0.9995	0.00	-0.05	1.0019	-0.05
1.000	0.1670	0.9849	0.15	-1.51	0.9757	-1.36
H2O	0.2171	0.9348	0.15	-6.52	0.8753	-6.37

Percent Swell (+) / Settlement (-) After Inundation = -5.08

Void Ratio - Log Pressure Curve



Appendix D
Infiltration Test Data

Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Our Lady of Peace, Irvine
Project Number: 23174-01
Date: 2/26/2024
Boring Number: I-1

Test hole dimensions (if circular)

Boring Depth (feet)*: 10
Boring Diameter (inches): 8
Pipe Diameter (inches): 3

*measured at time of test

Test pit dimensions (if rectangular)

Pit Depth (feet):
Pit Length (feet):
Pit Breadth (feet):

Minimum test Head (D_o):

(What the sounder tape should read)

Boring Depth - (5 x Boring Radius) 8.4 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:08	7:33	25.0	7.21	7.25	0.04	Yes
2	7:35	8:00	25.0	7.23	7.27	0.04	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Dt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, DD (feet)	Measured Infiltration Rate(in/hr)
1	8:00	8:30	30.0	7.20	7.24	0.04	0.1
2	8:32	9:02	30.0	7.24	7.28	0.04	0.1
3	9:04	9:34	30.0	7.28	7.31	0.03	0.0
4	9:37	10:07	30.0	7.31	7.34	0.03	0.0
5	10:09	10:39	30.0	7.25	7.29	0.04	0.1
6	10:41	11:11	30.0	7.21	7.24	0.03	0.0
7	11:13	11:43	30.0	7.24	7.27	0.03	0.0
8	11:45	12:15	30.0	7.27	7.29	0.02	0.0
9	12:18	12:48	30.0	7.18	7.21	0.03	0.0
10	12:50	13:20	30.0	7.21	7.23	0.02	0.0
11	13:22	13:52	30.0	7.23	7.25	0.02	0.0
12	13:52	14:22	30.0	7.25	7.27	0.02	0.0

Measured Infiltration Rate (No Factor of Safety)

0.03

Sketch:

Notes:

Based on Guidelines from: South Orange County 9/28/2017

Spreadsheet Revised on: 10/30/2019



Infiltration Test Data Sheet

LGC Geotechnical, Inc

131 Calle Iglesia Suite 200, San Clemente, CA 92672 tel. (949) 369-6141

Project Name: Our Lady of Peace, Irvine
Project Number: 23174-01
Date: 2/26/2024
Boring Number: I-2

Test hole dimensions (if circular)

Boring Depth (feet)*: 10
Boring Diameter (inches): 8
Pipe Diameter (inches): 3

*measured at time of test

Test pit dimensions (if rectangular)

Pit Depth (feet): _____
Pit Length (feet): _____
Pit Breadth (feet): _____

Minimum test Head (D_o):

(What the sounder tape should read)

Boring Depth - ($5 \times$ Boring Radius) 8.4 ft

(Shallow) The value on the sounder tape should be close to this value during testing for **DEEP** testing fill to 4 feet below top of hole

Pre-Test (Sandy Soil Criteria)*

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval (min)	Initial Depth to Water (feet)	Final Depth to Water (feet)	Total Change in Water Level (feet)	Greater Than or Equal to 0.5 feet (yes/no)
1	7:10	7:35	25.0	7.44	7.47	0.03	Yes
2	7:37	8:02	25.0	7.39	7.42	0.03	Yes

*If two consecutive measurements show that six inches of water seeps away in less than 25 minutes, the test shall be run for an additional hour with measurements taken every 10 minutes. Otherwise, pre-soak (fill) overnight, and then obtain at least twelve measurements per hole over at least six hours (approximately 30 minute intervals) with a precision of at least 0.25 inches

Main Test Data

Trial No.	Start Time (24:HR)	Stop Time (24:HR)	Time Interval, Dt (min)	Initial Depth to Water, D_o (feet)	Final Depth to Water, D_f (feet)	Change in Water Level, DD (feet)	Measured Infiltration Rate(in/hr)
1	8:04	8:34	30.0	7.42	7.45	0.03	0.0
2	8:36	9:06	30.0	7.35	7.38	0.03	0.0
3	9:08	9:38	30.0	7.36	7.39	0.03	0.0
4	9:40	10:10	30.0	7.31	7.33	0.02	0.0
5	10:12	10:42	30.0	7.33	7.36	0.03	0.0
6	10:45	11:15	30.0	7.36	7.38	0.02	0.0
7	11:17	11:47	30.0	7.33	7.35	0.02	0.0
8	11:49	12:19	30.0	7.34	7.36	0.02	0.0
9	12:22	12:52	30.0	7.32	7.34	0.02	0.0
10	12:54	13:24	30.0	7.34	7.35	0.01	0.0
11	13:26	13:56	30.0	7.35	7.36	0.01	0.0
12	13:57	14:27	30.0	7.36	7.37	0.01	0.0

Measured Infiltration Rate (No Factor of Safety)

0.01

Sketch:

Notes:

Based on Guidelines from: South Orange County 9/28/2017

Spreadsheet Revised on: 10/30/2019



Appendix E
General Earthwork and Grading
Specifications for Rough Grading

General Earthwork and Grading Specifications for Rough Grading

1.0 General

1.1 Intent

These General Earthwork and Grading Specifications are for the grading and earthwork shown on the approved grading plan(s) and/or indicated in the geotechnical report(s). These Specifications are a part of the recommendations contained in the geotechnical report(s). In case of conflict, the specific recommendations in the geotechnical report shall supersede these more general Specifications. Observations of the earthwork by the project Geotechnical Consultant during the course of grading may result in new or revised recommendations that could supersede these specifications or the recommendations in the geotechnical report(s).

1.2 The Geotechnical Consultant of Record

Prior to commencement of work, the owner shall employ a qualified Geotechnical Consultant of Record (Geotechnical Consultant). The Geotechnical Consultant shall be responsible for reviewing the approved geotechnical report(s) and accepting the adequacy of the preliminary geotechnical findings, conclusions, and recommendations prior to the commencement of the grading.

Prior to commencement of grading, the Geotechnical Consultant shall review the "work plan" prepared by the Earthwork Contractor (Contractor) and schedule sufficient personnel to perform the appropriate level of observation, mapping, and compaction testing.

During the grading and earthwork operations, the Geotechnical Consultant shall observe, map, and document the subsurface exposures to verify the geotechnical design assumptions. If the observed conditions are found to be significantly different than the interpreted assumptions during the design phase, the Geotechnical Consultant shall inform the owner, recommend appropriate changes in design to accommodate the observed conditions, and notify the review agency where required.

The Geotechnical Consultant shall observe the moisture-conditioning and processing of the subgrade and fill materials and perform relative compaction testing of fill to confirm that the attained level of compaction is being accomplished as specified. The Geotechnical Consultant shall provide the test results to the owner and the Contractor on a routine and frequent basis.

1.3 The Earthwork Contractor

The Earthwork Contractor (Contractor) shall be qualified, experienced, and knowledgeable in earthwork logistics, preparation and processing of ground to receive fill, moisture-conditioning and processing of fill, and compacting fill. The Contractor shall review and accept the plans, geotechnical report(s), and these Specifications prior to commencement of grading. The Contractor shall be solely responsible for performing the grading in accordance with the project plans and specifications. The Contractor shall prepare and submit to the owner and the Geotechnical Consultant a work plan that indicates the sequence of earthwork grading, the number of "equipment" of work and the estimated quantities of daily earthwork

contemplated for the site prior to commencement of grading. The Contractor shall inform the owner and the Geotechnical Consultant of changes in work schedules and updates to the work plan at least 24 hours in advance of such changes so that appropriate personnel will be available for observation and testing. The Contractor shall not assume that the Geotechnical Consultant is aware of all grading operations.

The Contractor shall have the sole responsibility to provide adequate equipment and methods to accomplish the earthwork in accordance with the applicable grading codes and agency ordinances, these Specifications, and the recommendations in the approved geotechnical report(s) and grading plan(s). If, in the opinion of the Geotechnical Consultant, unsatisfactory conditions, such as unsuitable soil, improper moisture condition, inadequate compaction, insufficient buttress key size, adverse weather, etc., are resulting in a quality of work less than required in these specifications, the Geotechnical Consultant shall reject the work and may recommend to the owner that construction be stopped until the conditions are rectified. It is the contractor's sole responsibility to provide proper fill compaction.

2.0 Preparation of Areas to be Filled

2.1 Clearing and Grubbing

Vegetation, such as brush, grass, roots, and other deleterious material shall be sufficiently removed and properly disposed of in a method acceptable to the owner, governing agencies, and the Geotechnical Consultant.

The Geotechnical Consultant shall evaluate the extent of these removals depending on specific site conditions. Earth fill material shall not contain more than 1 percent of organic materials (by volume). Nesting of the organic materials shall not be allowed.

If potentially hazardous materials are encountered, the Contractor shall stop work in the affected area, and a hazardous material specialist shall be informed immediately for proper evaluation and handling of these materials prior to continuing to work in that area.

As presently defined by the State of California, most refined petroleum products (gasoline, diesel fuel, motor oil, grease, coolant, etc.) have chemical constituents that are considered to be hazardous waste. As such, the indiscriminate dumping or spillage of these fluids onto the ground may constitute a misdemeanor, punishable by fines and/or imprisonment, and shall not be allowed. The contractor is responsible for all hazardous waste relating to his work. The Geotechnical Consultant does not have expertise in this area. If hazardous waste is a concern, then the Client should acquire the services of a qualified environmental assessor.

2.2 Processing

Existing ground that has been declared satisfactory for support of fill by the Geotechnical Consultant shall be scarified to a minimum depth of 6 inches. Existing ground that is not satisfactory shall be over-excavated as specified in the following section. Scarification shall continue until soils are broken down and free of oversize material and the working surface is reasonably uniform, flat, and free of uneven features that would inhibit uniform compaction.

2.3 Over-excavation

In addition to removals and over-excavations recommended in the approved geotechnical report(s) and the grading plan, soft, loose, dry, saturated, spongy, organic-rich, highly fractured or otherwise unsuitable ground shall be over-excavated to competent ground as evaluated by the Geotechnical Consultant during grading.

2.4 Benching

Where fills are to be placed on ground with slopes steeper than 5:1 (horizontal to vertical units), the ground shall be stepped or benched. Please see the Standard Details for a graphic illustration. The lowest bench or key shall be a minimum of 15 feet wide and at least 2 feet deep, into competent material as evaluated by the Geotechnical Consultant. Other benches shall be excavated a minimum height of 4 feet into competent material or as otherwise recommended by the Geotechnical Consultant. Fill placed on ground sloping flatter than 5:1 shall also be benched or otherwise over-excavated to provide a flat subgrade for the fill.

2.5 Evaluation/Acceptance of Fill Areas

All areas to receive fill, including removal and processed areas, key bottoms, and benches, shall be observed, mapped, elevations recorded, and/or tested prior to being accepted by the Geotechnical Consultant as suitable to receive fill. The Contractor shall obtain a written acceptance from the Geotechnical Consultant prior to fill placement. A licensed surveyor shall provide the survey control for determining elevations of processed areas, keys, and benches.

3.0 Fill Material

3.1 General

Material to be used as fill shall be essentially free of organic matter and other deleterious substances evaluated and accepted by the Geotechnical Consultant prior to placement. Soils of poor quality, such as those with unacceptable gradation, high expansion potential, or low strength shall be placed in areas acceptable to the Geotechnical Consultant or mixed with other soils to achieve satisfactory fill material.

3.2 Oversize

Oversize material defined as rock, or other irreducible material with a maximum dimension greater than 8 inches, shall not be buried or placed in fill unless location, materials, and placement methods are specifically accepted by the Geotechnical Consultant. Placement operations shall be such that nesting of oversized material does not occur and such that oversize material is completely surrounded by compacted or densified fill. Oversize material shall not be placed within 10 vertical feet of finish grade or within 2 feet of future utilities or underground construction.

3.3 Import

If importing of fill material is required for grading, proposed import material shall meet the requirements of the geotechnical consultant. The potential import source shall be given to the Geotechnical Consultant at least 48 hours (2 working days) before importing begins so that its suitability can be determined and appropriate tests performed.

4.0 Fill Placement and Compaction

4.1 Fill Layers

Approved fill material shall be placed in areas prepared to receive fill (per Section 3.0) in near-horizontal layers not exceeding 8 inches in loose thickness. The Geotechnical Consultant may accept thicker layers if testing indicates the grading procedures can adequately compact the thicker layers. Each layer shall be spread evenly and mixed thoroughly to attain relative uniformity of material and moisture throughout.

4.2 Fill Moisture Conditioning

Fill soils shall be watered, dried back, blended, and/or mixed, as necessary to attain a relatively uniform moisture content at or slightly over optimum. Maximum density and optimum soil moisture content tests shall be performed in accordance with the American Society of Testing and Materials (ASTM Test Method D1557).

4.3 Compaction of Fill

After each layer has been moisture-conditioned, mixed, and evenly spread, it shall be uniformly compacted to not less than 90 percent of maximum dry density (ASTM Test Method D1557). Compaction equipment shall be adequately sized and be either specifically designed for soil compaction or of proven reliability to efficiently achieve the specified level of compaction with uniformity.

4.4 Compaction of Fill Slopes

In addition to normal compaction procedures specified above, compaction of slopes shall be accomplished by backrolling of slopes with sheepfoot rollers at increments of 3 to 4 feet in fill elevation, or by other methods producing satisfactory results acceptable to the Geotechnical Consultant. Upon completion of grading, relative compaction of the fill, out to the slope face, shall be at least 90 percent of maximum density per ASTM Test Method D1557.

4.5 Compaction Testing

Field tests for moisture content and relative compaction of the fill soils shall be performed by the Geotechnical Consultant. Location and frequency of tests shall be at the Consultant's discretion based on field conditions encountered. Compaction test locations will not necessarily be selected on a random basis. Test locations shall be selected to verify adequacy of compaction levels in areas that are judged to be prone to inadequate compaction (such as close to slope faces and at the fill/bedrock benches).

4.6 Frequency of Compaction Testing

Tests shall be taken at intervals not exceeding 2 feet in vertical rise and/or 1,000 cubic yards of compacted fill soils embankment. In addition, as a guideline, at least one test shall be taken on slope faces for each 5,000 square feet of slope face and/or each 10 feet of vertical height of slope. The Contractor shall assure that fill construction is such that the testing schedule can be accomplished by the Geotechnical Consultant. The Contractor shall stop or slow down the earthwork construction if these minimum standards are not met.

4.7 Compaction Test Locations

The Geotechnical Consultant shall document the approximate elevation and horizontal coordinates of each test location. The Contractor shall coordinate with the project surveyor to assure that sufficient grade stakes are established so that the Geotechnical Consultant can determine the test locations with sufficient accuracy. At a minimum, two grade stakes within a horizontal distance of 100 feet and vertically less than 5 feet apart from potential test locations shall be provided.

5.0 Subdrain Installation

Subdrain systems shall be installed in accordance with the approved geotechnical report(s), the grading plan, and the Standard Details. The Geotechnical Consultant may recommend additional subdrains and/or changes in subdrain extent, location, grade, or material depending on conditions encountered during grading. All subdrains shall be surveyed by a land surveyor/civil engineer for line and grade after installation and prior to burial. Sufficient time should be allowed by the Contractor for these surveys.

6.0 Excavation

Excavations, as well as over-excavation for remedial purposes, shall be evaluated by the Geotechnical Consultant during grading. Remedial removal depths shown on geotechnical plans are estimates only. The actual extent of removal shall be determined by the Geotechnical Consultant based on the field evaluation of exposed conditions during grading. Where fill-over-cut slopes are to be graded, the cut portion of the slope shall be made, evaluated, and accepted by the Geotechnical Consultant prior to placement of materials for construction of the fill portion of the slope, unless otherwise recommended by the Geotechnical Consultant.

7.0 Trench Backfills

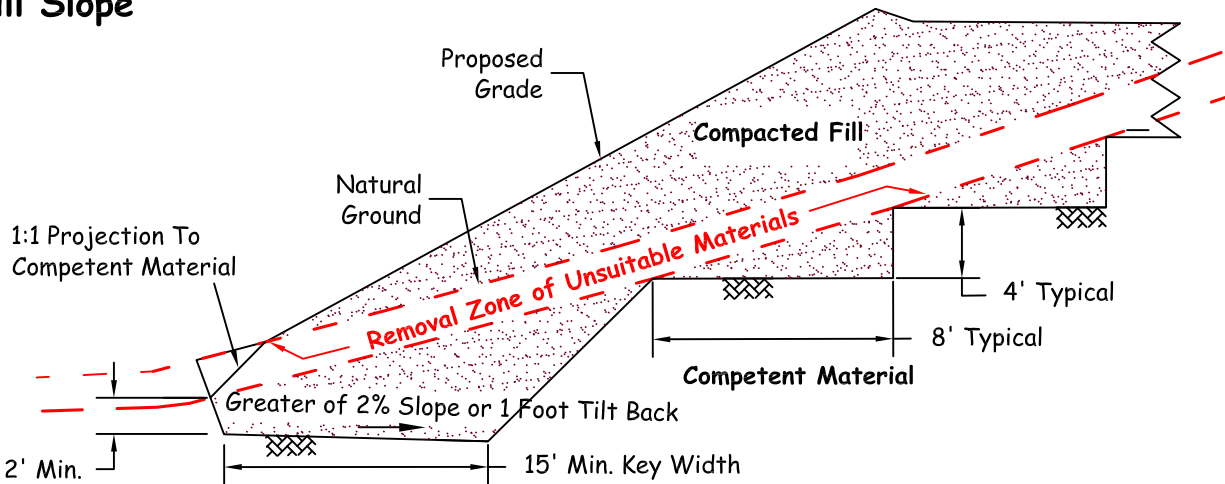
7.1 The Contractor shall follow all OHSA and Cal/OSHA requirements for safety of trench excavations.

7.2 All bedding and backfill of utility trenches shall be done in accordance with the applicable provisions of Standard Specifications of Public Works Construction. Bedding material shall have a Sand Equivalent greater than 30 (SE>30). The bedding shall be placed to 1 foot over

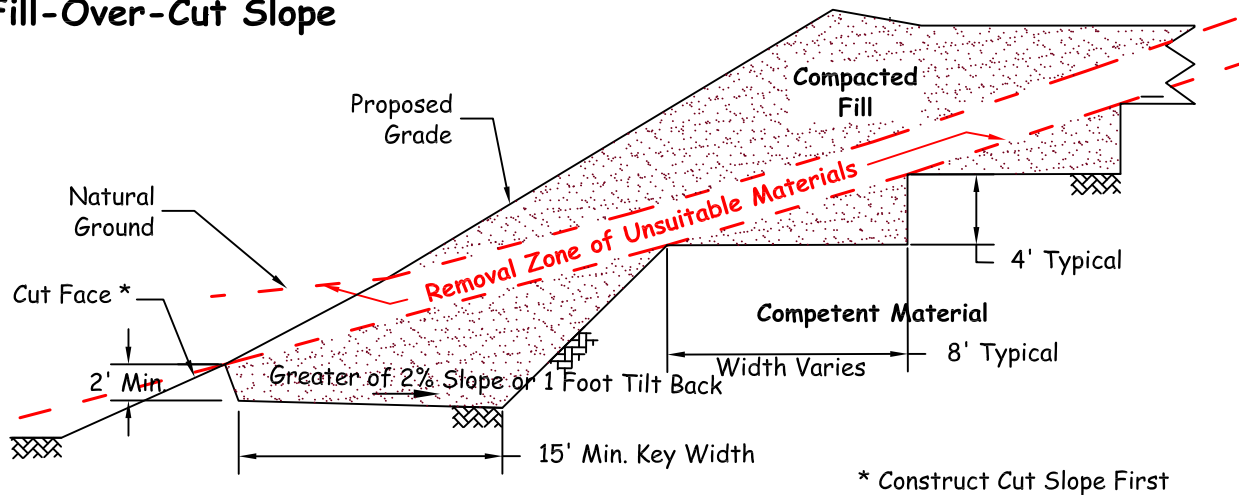
the top of the conduit and densified by jetting. Backfill shall be placed and densified to a minimum of 90 percent of maximum from 1 foot above the top of the conduit to the surface.

- 7.3** The jetting of the bedding around the conduits shall be observed by the Geotechnical Consultant.
- 7.4** The Geotechnical Consultant shall test the trench backfill for relative compaction. At least one test should be made for every 300 feet of trench and 2 feet of fill.
- 7.5** Lift thickness of trench backfill shall not exceed those allowed in the Standard Specifications of Public Works Construction unless the Contractor can demonstrate to the Geotechnical Consultant that the fill lift can be compacted to the minimum relative compaction by his alternative equipment and method.

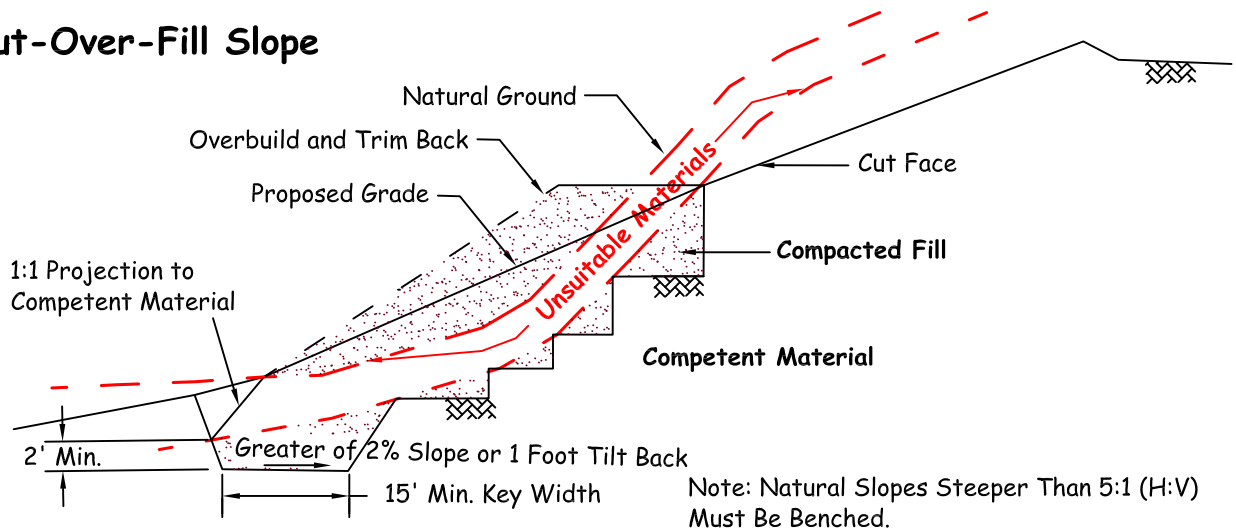
Fill Slope

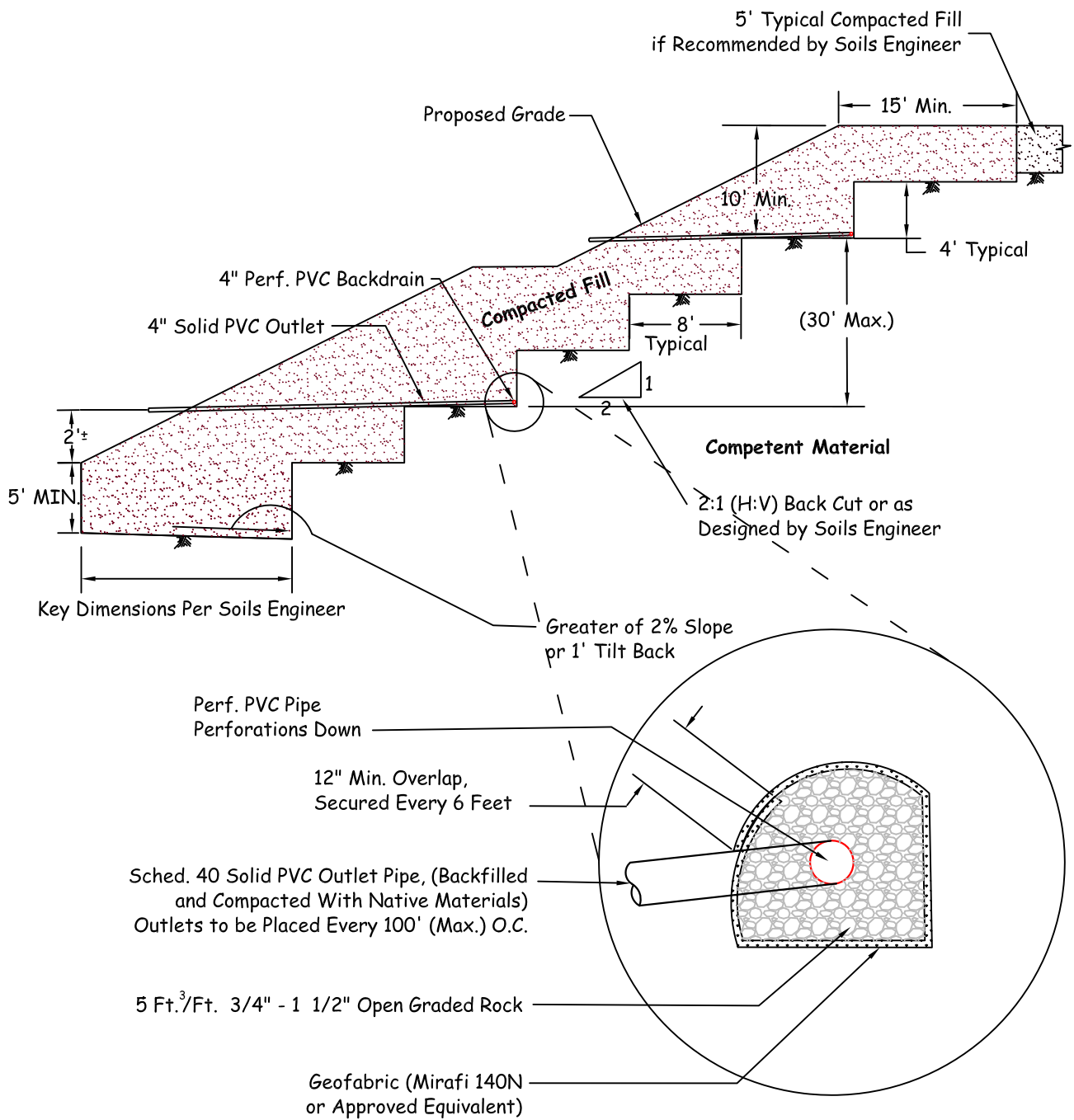


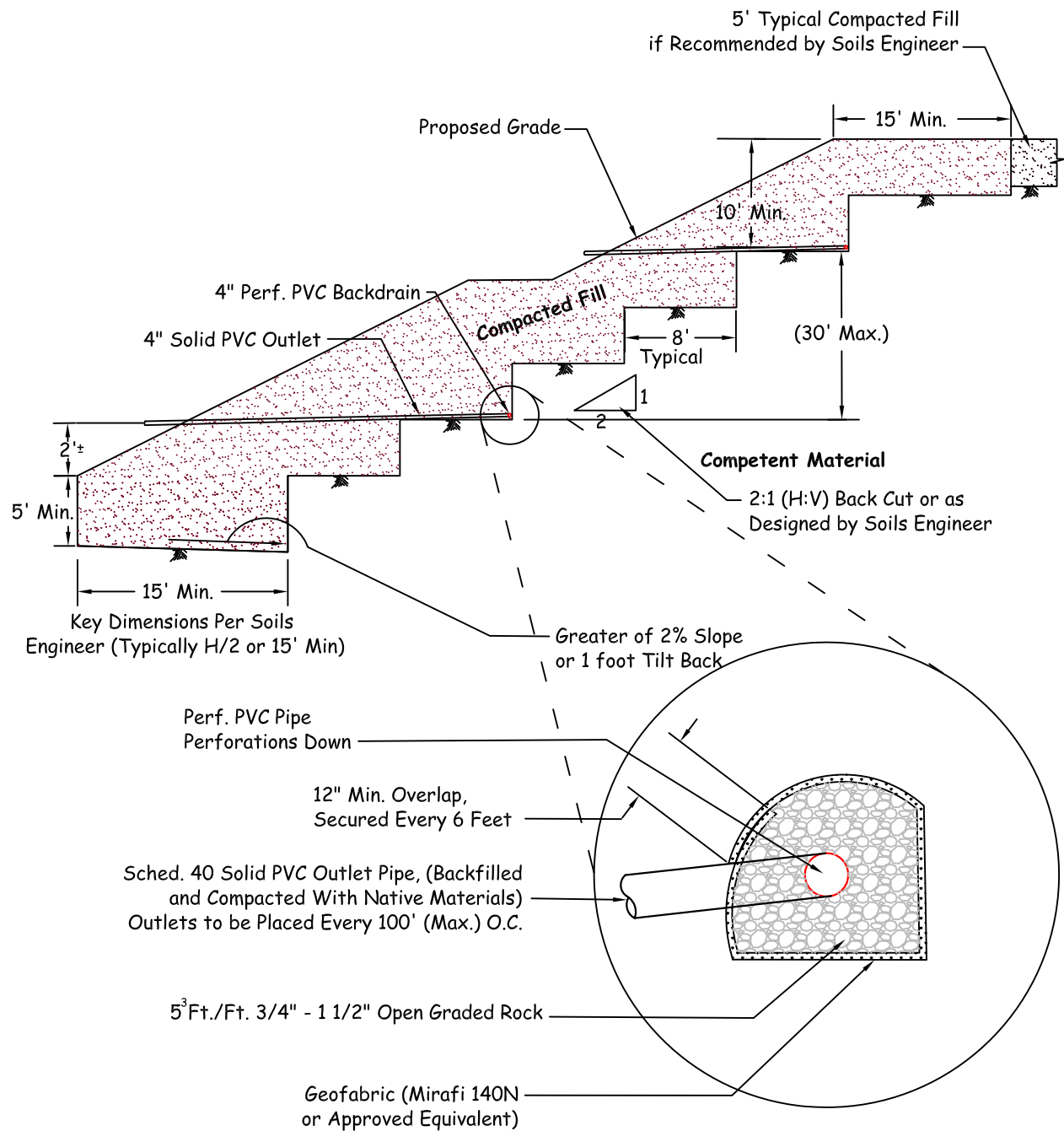
Fill-Over-Cut Slope



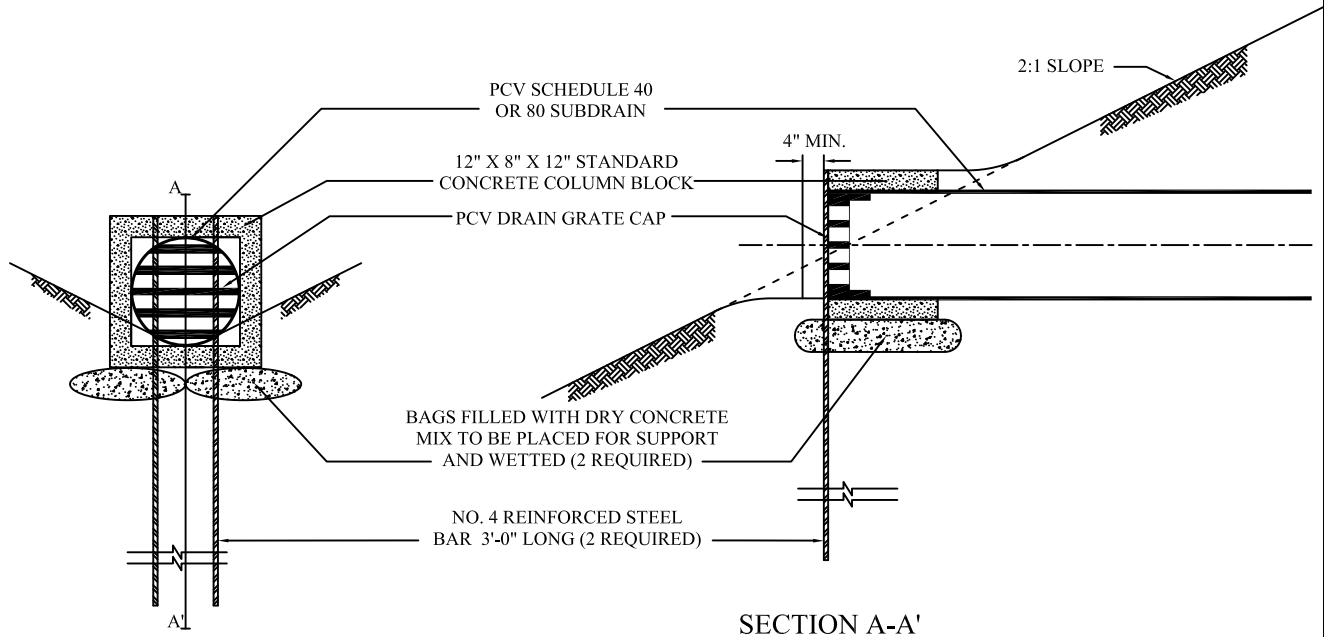
Cut-Over-Fill Slope



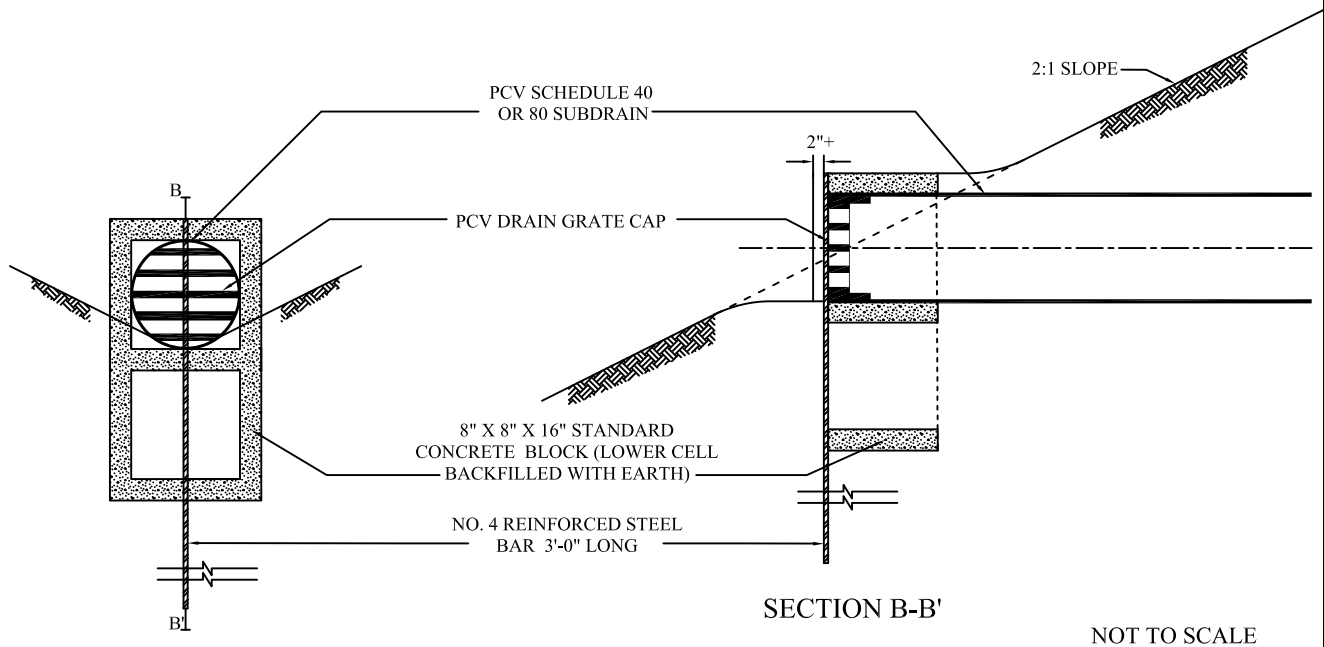




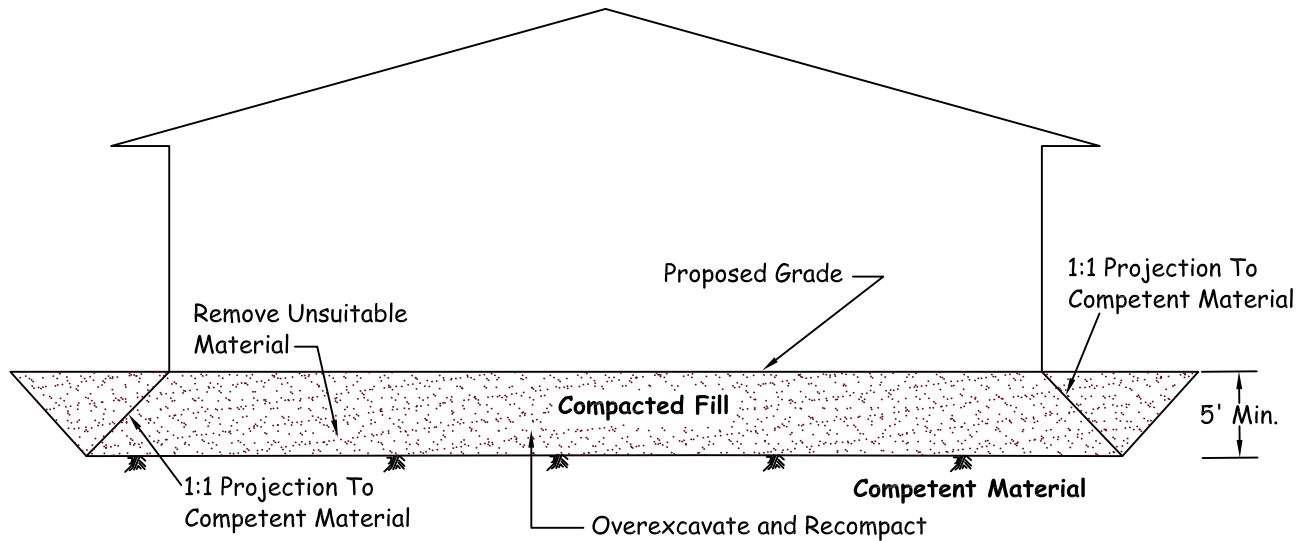
SUBDRAIN OUTLET MARKER -6" & 8" PIPE



SUBDRAIN OUTLET MARKER -4" PIPE



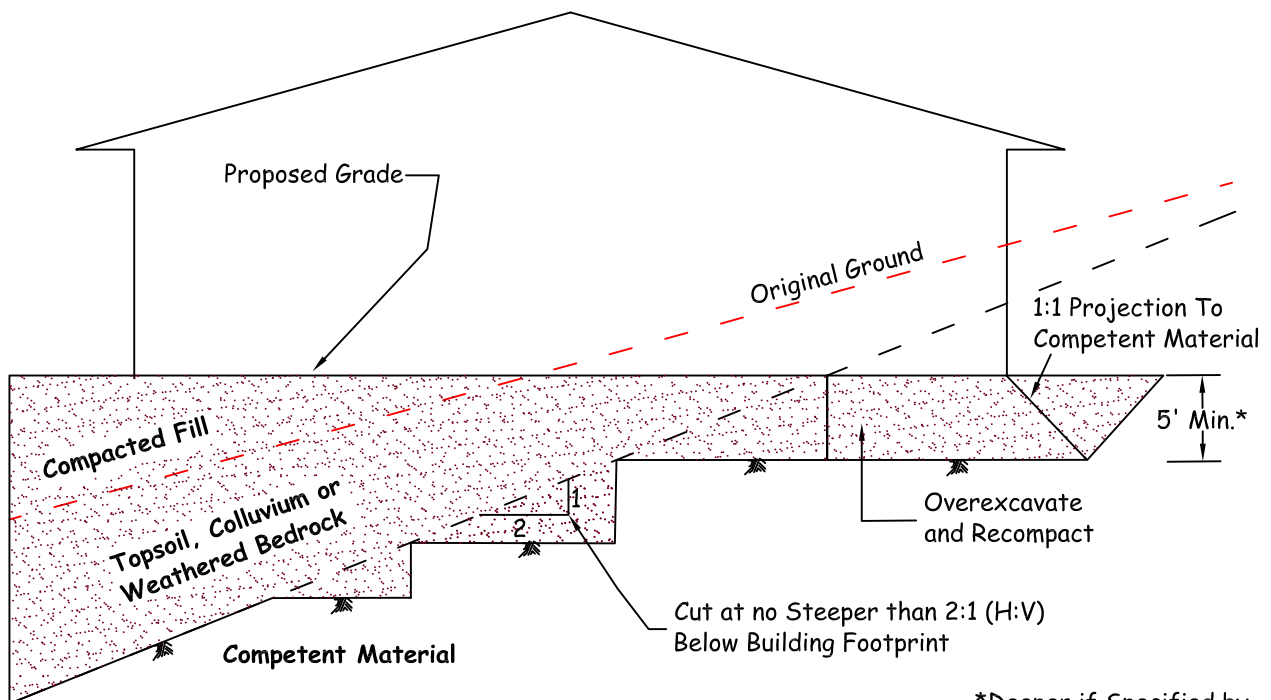
Cut Lot (Exposing Unsuitable Soils at Design Grade)



Note 1: Removal Bottom Should be Graded With Minimum 2% Fall Towards Street or Other Suitable Area (as Determined by Soils Engineer) to Avoid Ponding Below Building

Note 2: Where Design Cut Lots are Excavated Entirely Into Competent Material, Overexcavation May Still be Required for Hard-Rock Conditions or for Materials With Variable Expansion Characteristics.

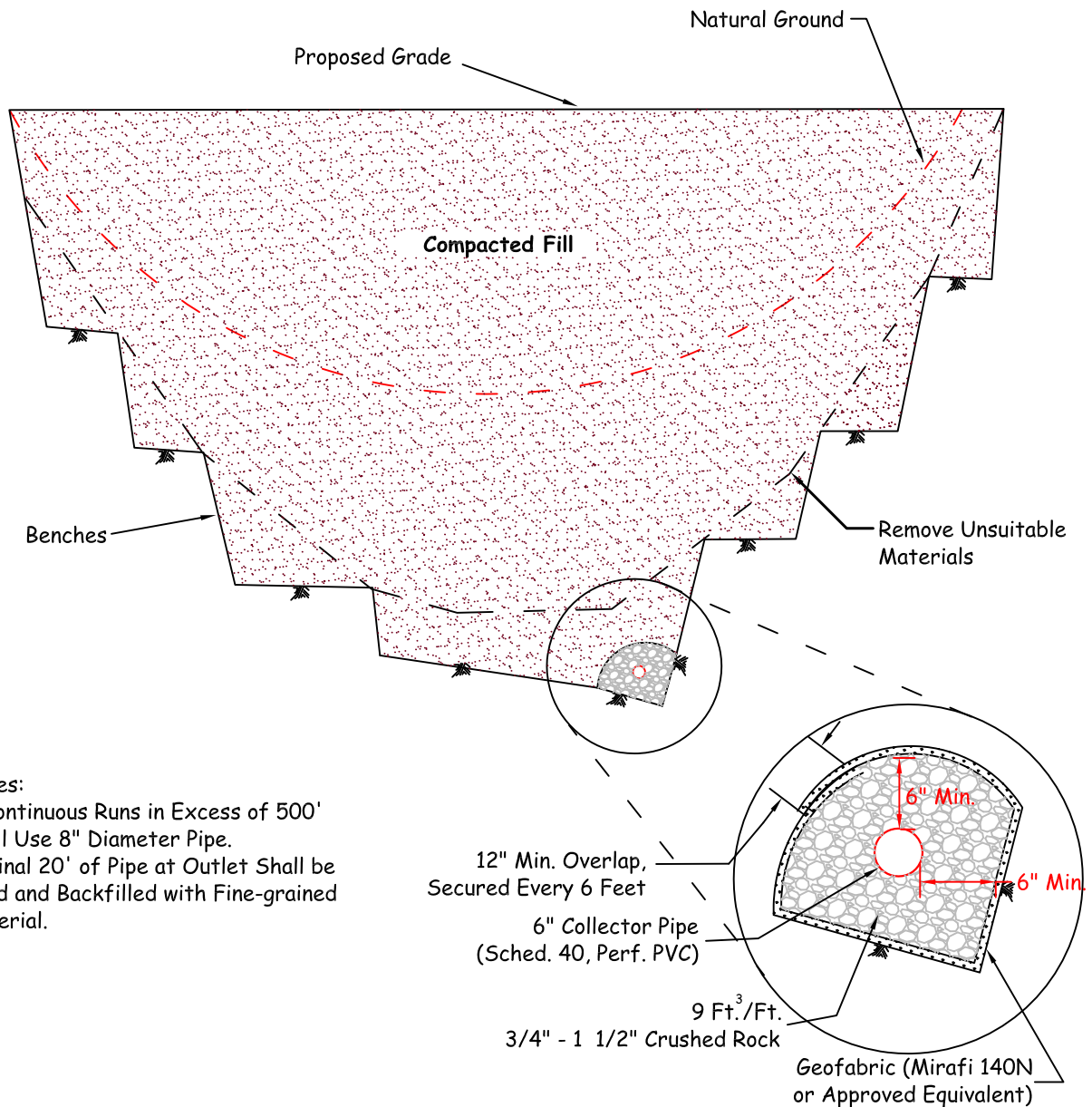
Cut/Fill Transition Lot



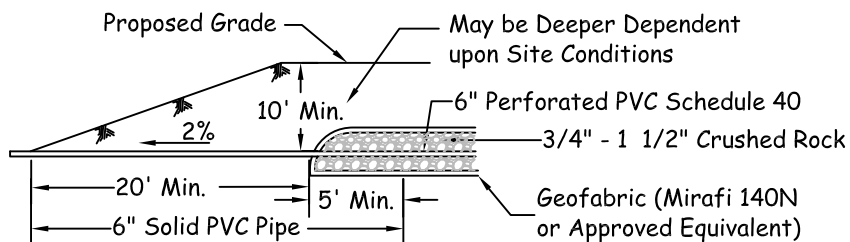
*Deeper if Specified by Soils Engineer

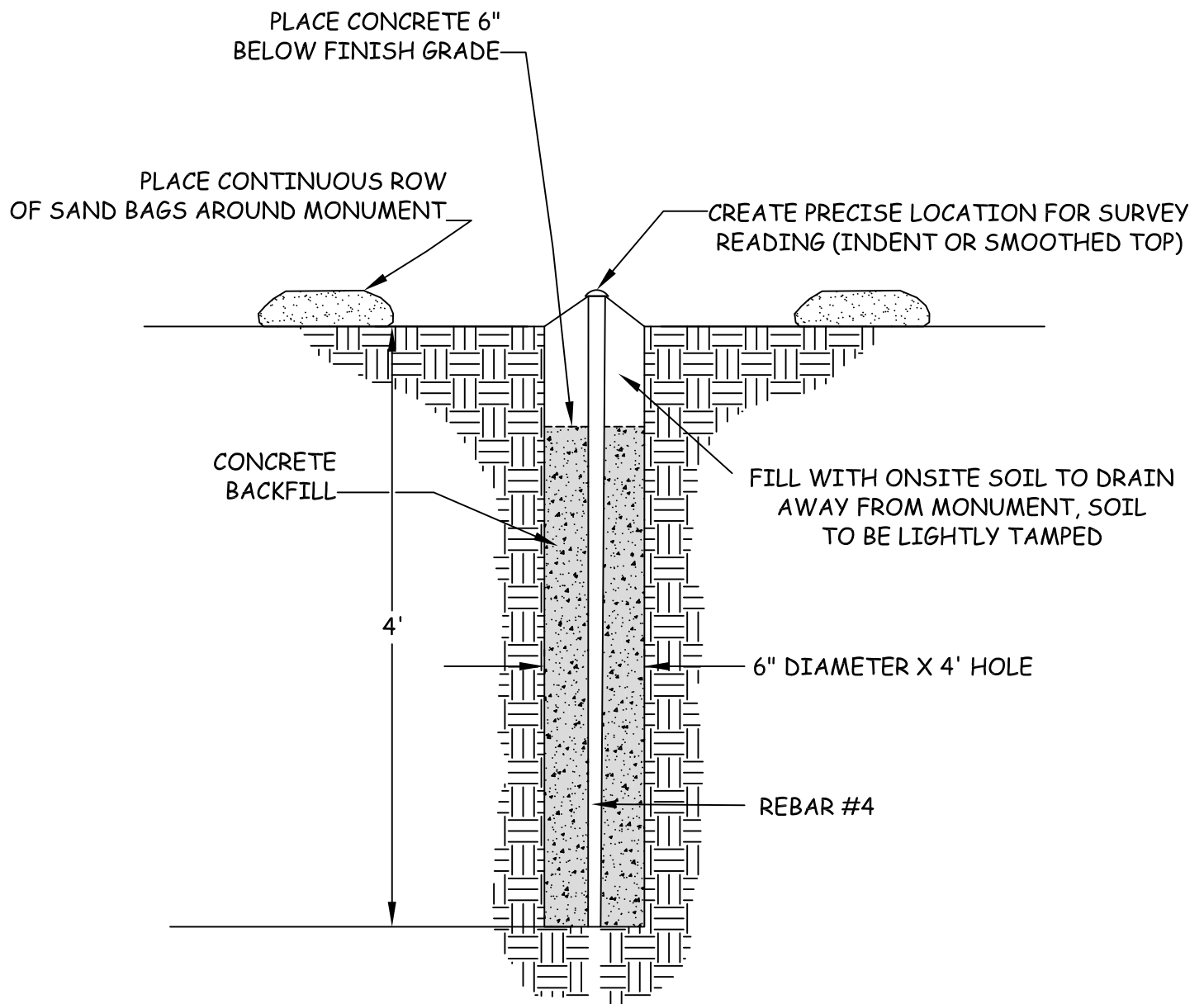


CUT AND TRANSITION LOT OVEREXCAVATION DETAIL



Proposed Outlet Detail

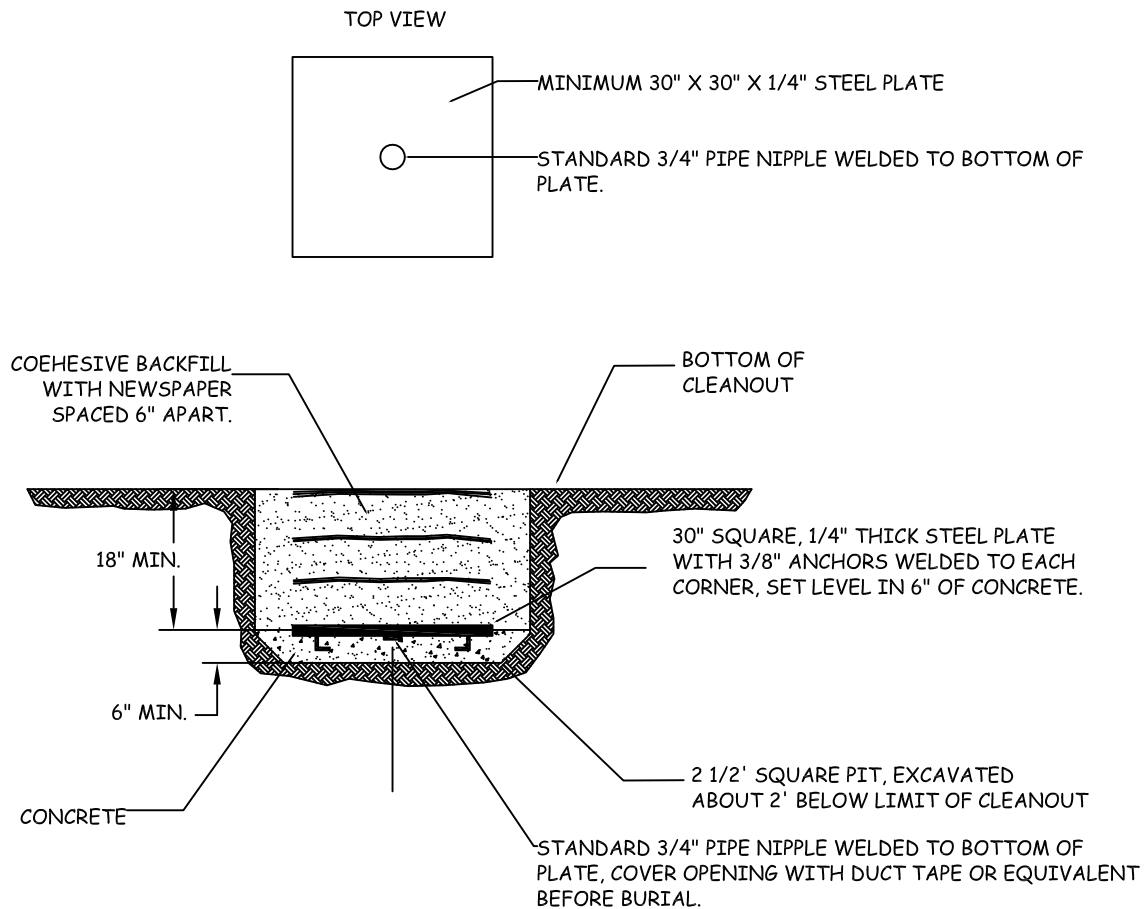




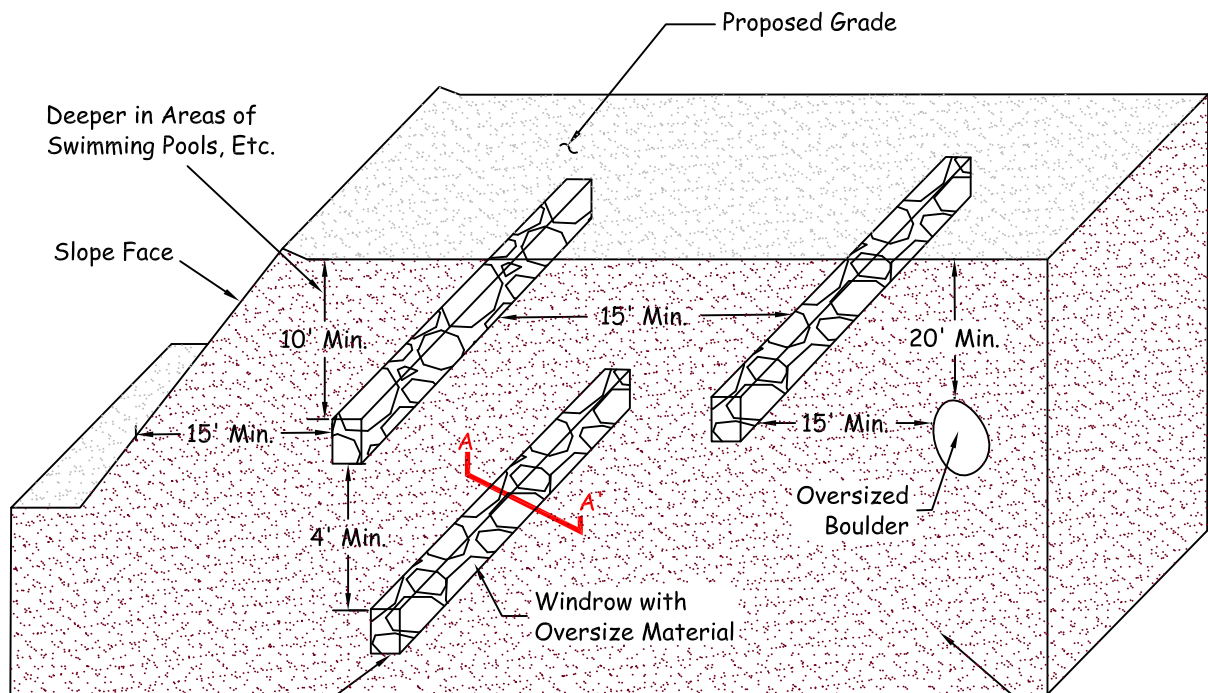
NO CONSTRUCTION EQUIPMENT WITHIN 25 FEET
OF ANY INSTALLED SETTLEMENT MONUMENTS



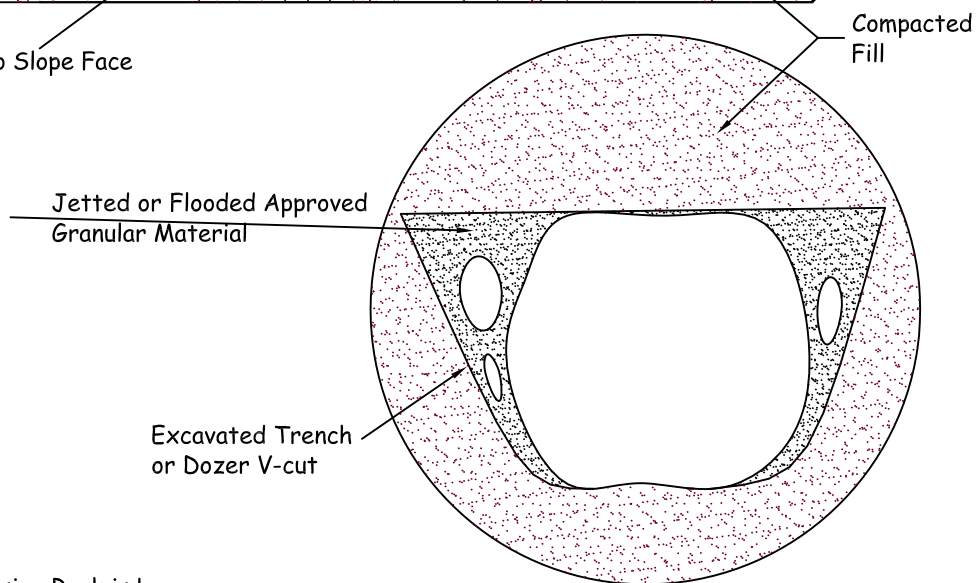
TYPICAL SURFACE SETTLEMENT MONUMENT



1. SURVEY FOR HORIZONTAL AND VERTICAL LOCATION TO NEAREST .01 INCH PRIOR TO BACKFILL USING KNOW LOCATIONS THAT WILL REMAIN INTACT DURING THE DURATION OF THE MONITORING PROGRAM. KNOW POINTS EXPLICITLY NOT ALLOWED ARE THOSE LOCATED ON FILL OR THAT WILL BE DESTROYED DURING GRADING.
2. IN THE EVENT OF DAMAGE TO SETTLEMENT PLATE DURING GRADING, CONTRACTOR SHALL IMMEDIATELY NOTIFY THE GEOTECHNICAL ENGINEER AND SHALL BE RESPONSIBLE FOR RESTORING THE SETTLEMENT PLATES TO WORKING ORDER.
3. DRILL TO RECOVER AND ATTACH RISER PIPE.



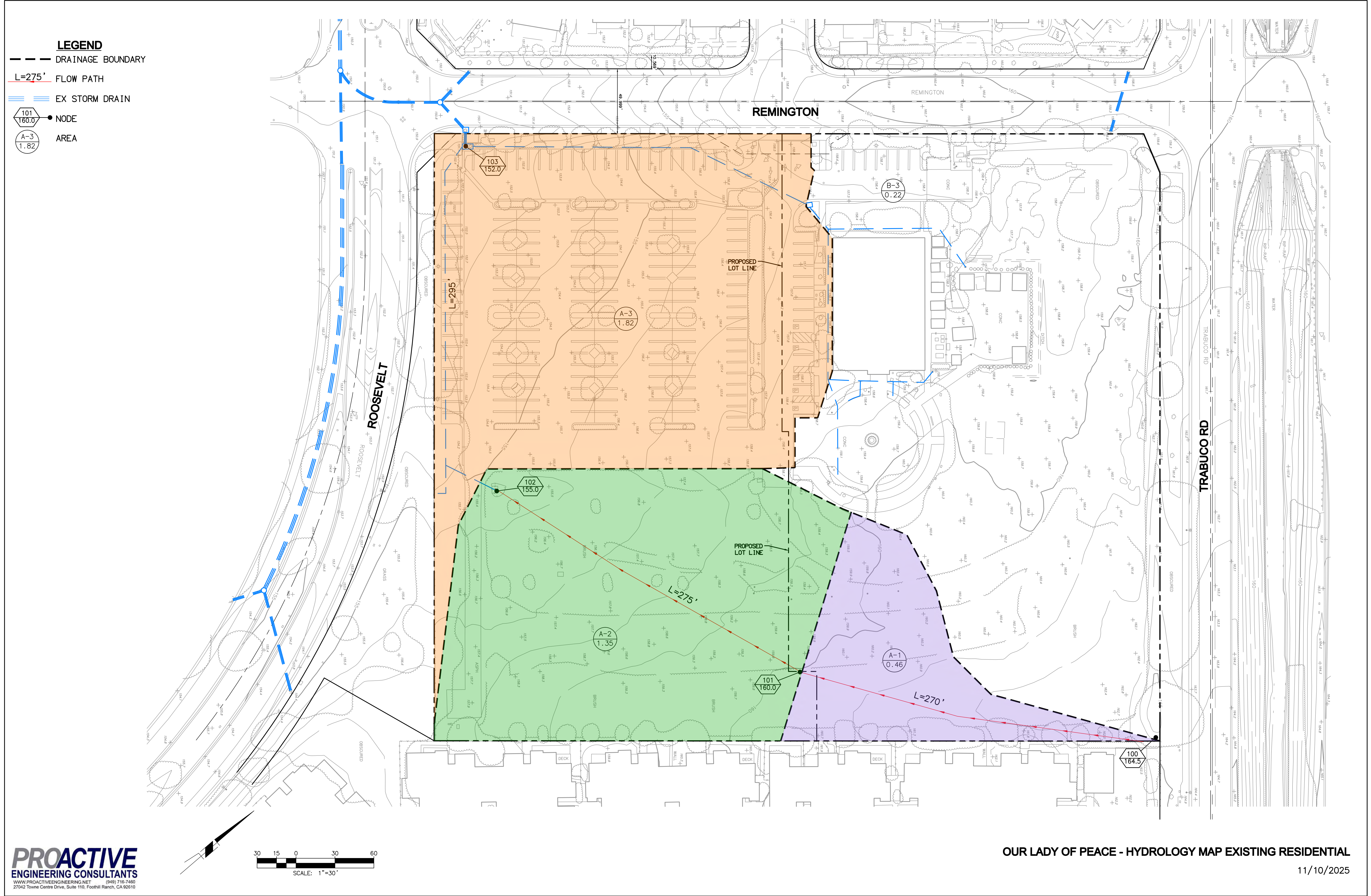
Windrow Parallel to Slope Face



Section A-A'

Note: Oversize Rock is Larger than 8" in Maximum Dimension.

Attachment E: 2 Year Storm Hydrology



RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
(c) Copyright 1983-2015 Advanced Engineering Software (aes)
Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* OLP RESIDENTIAL *
* EXISTING *
* 2 YEAR *

FILE NAME: RES2EX.DAT
TIME/DATE OF STUDY: 13:59 11/08/2025

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0312 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 100.00 TO NODE 101.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 270.00

ELEVATION DATA: UPSTREAM(FEET) = 164.50 DOWNSTREAM(FEET) = 160.00

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION\ CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 11.177

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.427

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
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NATURAL POOR COVER

"BARREN" C 0.46 0.25 1.000 91 11.18

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

SUBAREA RUNOFF(CFS) = 0.49

TOTAL AREA(ACRES) = 0.46 PEAK FLOW RATE(CFS) = 0.49

FLOW PROCESS FROM NODE 101.00 TO NODE 102.00 IS CODE = 51

>>>>>COMPUTE TRAPEZOIDAL CHANNEL FLOW<<<<<

>>>>>TRAVELTIME THRU SUBAREA (EXISTING ELEMENT)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 160.00 DOWNSTREAM(FEET) = 155.00

CHANNEL LENGTH THRU SUBAREA(FEET) = 275.00 CHANNEL SLOPE = 0.0182

CHANNEL BASE(FEET) = 100.00 "Z" FACTOR = 5.000

MANNING'S FACTOR = 0.030 MAXIMUM DEPTH(FEET) = 1.00

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.005

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
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NATURAL POOR COVER

"BARREN" C 1.35 0.25 1.000 91

SUBAREA AVERAGE PERVIOUS LOSSRATE, Fp(INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 1.000

TRAVEL TIME COMPUTED USING ESTIMATED FLOW(CFS) = 0.98

TRAVEL TIME THRU SUBAREA BASED ON VELOCITY(FEET/SEC.) = 0.49

AVERAGE FLOW DEPTH(FEET) = 0.02 TRAVEL TIME(MIN.) = 9.40

T_c (MIN.) = 20.57

SUBAREA AREA(ACRES) = 1.35 SUBAREA RUNOFF(CFS) = 0.92

EFFECTIVE AREA(ACRES) = 1.81 AREA-AVERAGED F_m (INCH/HR) = 0.25

AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 1.00

TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 1.23

END OF SUBAREA CHANNEL FLOW HYDRAULICS:

DEPTH(FEET) = 0.02 FLOW VELOCITY(FEET/SEC.) = 0.61

LONGEST FLOWPATH FROM NODE 100.00 TO NODE 102.00 = 545.00 FEET.

FLOW PROCESS FROM NODE 102.00 TO NODE 103.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<
=====

ELEVATION DATA: UPSTREAM(FEET) = 155.00 DOWNSTREAM(FEET) = 152.00
FLOW LENGTH(FEET) = 295.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.2 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.92
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.23
PIPE TRAVEL TIME(MIN.) = 1.25 Tc(MIN.) = 21.83
LONGEST FLOWPATH FROM NODE 100.00 TO NODE 103.00 = 840.00 FEET.

FLOW PROCESS FROM NODE 103.00 TO NODE 103.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<
=====

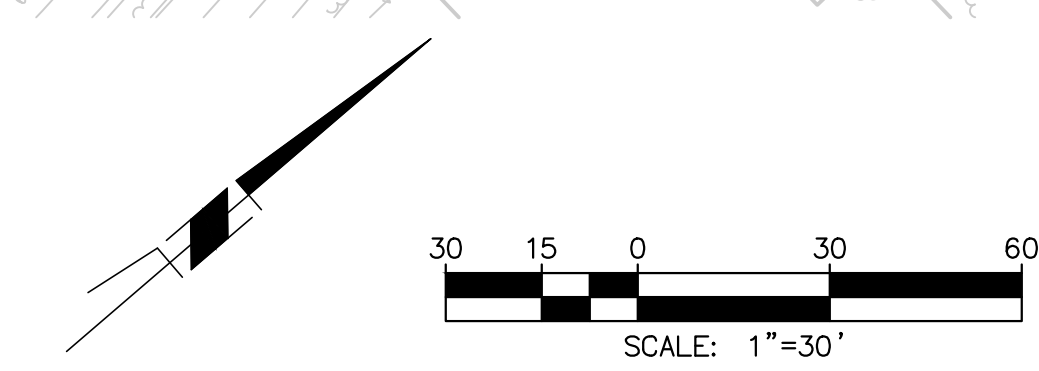
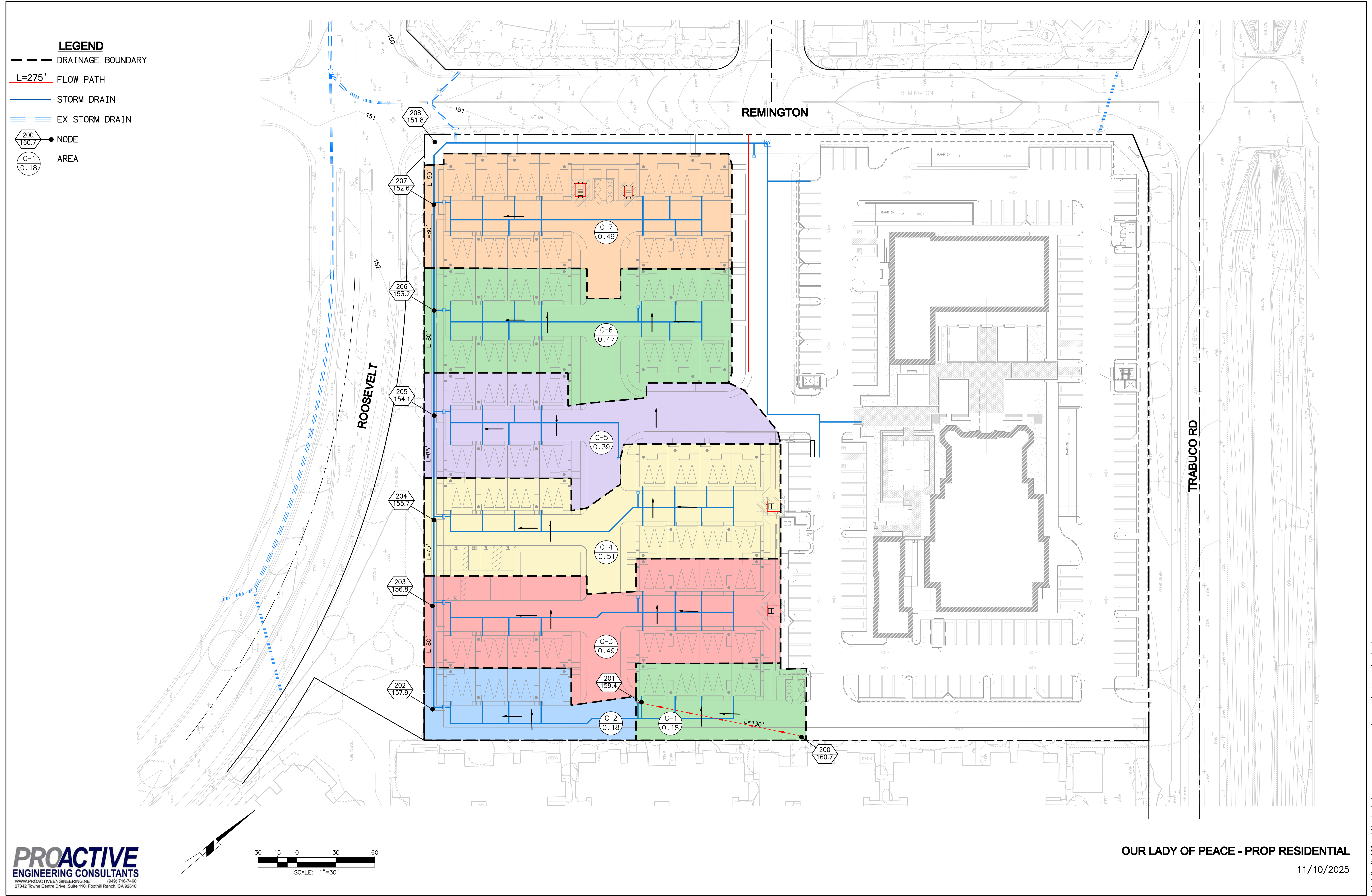
MAINLINE Tc(MIN.) = 21.83
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 0.971
SUBAREA LOSS RATE DATA(AMC II):
DEVELOPMENT TYPE/ SCS SOIL AREA Fp Ap SCS
LAND USE GROUP (ACRES) (INCH/HR) (DECIMAL) CN
COMMERCIAL C 1.82 0.25 0.100 69
SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.100
SUBAREA AREA(ACRES) = 1.82 SUBAREA RUNOFF(CFS) = 1.55
EFFECTIVE AREA(ACRES) = 3.63 AREA-AVERAGED Fm(INCH/HR) = 0.14
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.55
TOTAL AREA(ACRES) = 3.6 PEAK FLOW RATE(CFS) = 2.73
=====

END OF STUDY SUMMARY:
TOTAL AREA(ACRES) = 3.6 TC(MIN.) = 21.83
EFFECTIVE AREA(ACRES) = 3.63 AREA-AVERAGED Fm(INCH/HR)= 0.14
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.549
PEAK FLOW RATE(CFS) = 2.73
=====

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END OF RATIONAL METHOD ANALYSIS





RATIONAL METHOD HYDROLOGY COMPUTER PROGRAM PACKAGE
(Reference: 1986 ORANGE COUNTY HYDROLOGY CRITERION)
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Ver. 22.0 Release Date: 07/01/2015 License ID 1673

Analysis prepared by:

***** DESCRIPTION OF STUDY *****

* OLP RESIDENTIAL *
* PROPOSED *
* 2 YEAR *

FILE NAME: RES2PR.DAT
TIME/DATE OF STUDY: 14:08 11/08/2025

=====

USER SPECIFIED HYDROLOGY AND HYDRAULIC MODEL INFORMATION:

=====

--*TIME-OF-CONCENTRATION MODEL*--

USER SPECIFIED STORM EVENT(YEAR) = 2.00
SPECIFIED MINIMUM PIPE SIZE(INCH) = 18.00
SPECIFIED PERCENT OF GRADIENTS(DECIMAL) TO USE FOR FRICTION SLOPE = 0.95
DATA BANK RAINFALL USED
ANTECEDENT MOISTURE CONDITION (AMC) II ASSUMED FOR RATIONAL METHOD

USER-DEFINED STREET-SECTIONS FOR COUPLED PIPEFLOW AND STREETFLOW MODEL

NO.	HALF- WIDTH (FT)	CROWN TO CROSSFALL (FT)	STREET-CROSSFALL: IN- / OUT-/PARK- SIDE / SIDE/ WAY	CURB HEIGHT (FT)	GUTTER-GEOMETRIES: WIDTH LIP HIKE (FT) (FT) (FT)	MANNING FACTOR (n)
1	30.0	20.0	0.018/0.018/0.020	0.67	2.00 0.0312 0.167	0.0150

GLOBAL STREET FLOW-DEPTH CONSTRAINTS:

1. Relative Flow-Depth = 0.00 FEET
as (Maximum Allowable Street Flow Depth) - (Top-of-Curb)
2. (Depth)*(Velocity) Constraint = 6.0 (FT*FT/S)

*SIZE PIPE WITH A FLOW CAPACITY GREATER THAN
OR EQUAL TO THE UPSTREAM TRIBUTARY PIPE.*

*USER-SPECIFIED MINIMUM TOPOGRAPHIC SLOPE ADJUSTMENT NOT SELECTED

FLOW PROCESS FROM NODE 200.00 TO NODE 201.00 IS CODE = 21

>>>>>RATIONAL METHOD INITIAL SUBAREA ANALYSIS<<<<<

>>USE TIME-OF-CONCENTRATION NOMOGRAPH FOR INITIAL SUBAREA<<

=====

INITIAL SUBAREA FLOW-LENGTH(FEET) = 130.00

ELEVATION DATA: UPSTREAM(FEET) = 160.70 DOWNSTREAM(FEET) = 159.40

$T_c = K * [(LENGTH^{**} 3.00) / (ELEVATION CHANGE)]^{**0.20}$

SUBAREA ANALYSIS USED MINIMUM T_c (MIN.) = 5.703

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 2.099

SUBAREA T_c AND LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN	T_c (MIN.)
APARTMENTS	C	0.18	0.25	0.200	69	5.70

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.200

SUBAREA RUNOFF(CFS) = 0.33

TOTAL AREA(ACRES) = 0.18 PEAK FLOW RATE(CFS) = 0.33

FLOW PROCESS FROM NODE 201.00 TO NODE 202.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 159.40 DOWNSTREAM(FEET) = 157.90

FLOW LENGTH(FEET) = 160.00 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000

DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.3 INCHES

PIPE-FLOW VELOCITY(FEET/SEC.) = 2.58

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 0.33

PIPE TRAVEL TIME(MIN.) = 1.03 T_c (MIN.) = 6.74

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 202.00 = 290.00 FEET.

FLOW PROCESS FROM NODE 202.00 TO NODE 202.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE T_c (MIN.) = 6.74

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.907

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	C	0.18	0.25	0.200	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, F_p (INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, A_p = 0.200

SUBAREA AREA(ACRES) = 0.18 SUBAREA RUNOFF(CFS) = 0.30

EFFECTIVE AREA(ACRES) = 0.36 AREA-AVERAGED F_m (INCH/HR) = 0.05

AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.20
TOTAL AREA(ACRES) = 0.4 PEAK FLOW RATE(CFS) = 0.60

FLOW PROCESS FROM NODE 202.00 TO NODE 203.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 157.90 DOWNSTREAM(FEET) = 156.80
FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 2.7 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 3.56
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 0.60
PIPE TRAVEL TIME(MIN.) = 0.37 Tc(MIN.) = 7.11
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 203.00 = 370.00 FEET.

FLOW PROCESS FROM NODE 203.00 TO NODE 203.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 7.11
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.849
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	C	0.49	0.25	0.200	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.200
SUBAREA AREA(ACRES) = 0.49 SUBAREA RUNOFF(CFS) = 0.79
EFFECTIVE AREA(ACRES) = 0.85 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.20
TOTAL AREA(ACRES) = 0.9 PEAK FLOW RATE(CFS) = 1.38

FLOW PROCESS FROM NODE 203.00 TO NODE 204.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<
>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 156.80 DOWNSTREAM(FEET) = 155.70
FLOW LENGTH(FEET) = 70.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.0 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 4.73
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 1.38

PIPE TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 7.36
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 204.00 = 440.00 FEET.

FLOW PROCESS FROM NODE 204.00 TO NODE 204.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 7.36

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.813

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	C	0.51	0.25	0.200	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.200

SUBAREA AREA(ACRES) = 0.51 SUBAREA RUNOFF(CFS) = 0.81

EFFECTIVE AREA(ACRES) = 1.36 AREA-AVERAGED Fm(INCH/HR) = 0.05

AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.20

TOTAL AREA(ACRES) = 1.4 PEAK FLOW RATE(CFS) = 2.16

FLOW PROCESS FROM NODE 204.00 TO NODE 205.00 IS CODE = 31

>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<

>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(Feet) = 155.70 DOWNSTREAM(Feet) = 154.10

FLOW LENGTH(Feet) = 85.00 MANNING'S N = 0.013

ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000

DEPTH OF FLOW IN 18.0 INCH PIPE IS 4.8 INCHES

PIPE-FLOW VELOCITY(Feet/Sec.) = 5.76

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1

PIPE-FLOW(CFS) = 2.16

PIPE TRAVEL TIME(MIN.) = 0.25 Tc(MIN.) = 7.60

LONGEST FLOWPATH FROM NODE 200.00 TO NODE 205.00 = 525.00 FEET.

FLOW PROCESS FROM NODE 205.00 TO NODE 205.00 IS CODE = 81

>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 7.60

* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.779

SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	C	0.39	0.25	0.200	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25

SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.200

SUBAREA AREA(ACRES) = 0.39 SUBAREA RUNOFF(CFS) = 0.61
 EFFECTIVE AREA(ACRES) = 1.75 AREA-AVERAGED Fm(INCH/HR) = 0.05
 AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.20
 TOTAL AREA(ACRES) = 1.8 PEAK FLOW RATE(CFS) = 2.72

FLOW PROCESS FROM NODE 205.00 TO NODE 206.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 154.10 DOWNSTREAM(FEET) = 153.20
 FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.1 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 5.11
 ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
 PIPE-FLOW(CFS) = 2.72
 PIPE TRAVEL TIME(MIN.) = 0.26 Tc(MIN.) = 7.87
 LONGEST FLOWPATH FROM NODE 200.00 TO NODE 206.00 = 605.00 FEET.

FLOW PROCESS FROM NODE 206.00 TO NODE 206.00 IS CODE = 81

 >>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<

=====

MAINLINE Tc(MIN.) = 7.87
 * 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.745
 SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	C	0.47	0.25	0.200	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
 SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.200
 SUBAREA AREA(ACRES) = 0.47 SUBAREA RUNOFF(CFS) = 0.72
 EFFECTIVE AREA(ACRES) = 2.22 AREA-AVERAGED Fm(INCH/HR) = 0.05
 AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.20
 TOTAL AREA(ACRES) = 2.2 PEAK FLOW RATE(CFS) = 3.39

FLOW PROCESS FROM NODE 206.00 TO NODE 207.00 IS CODE = 31

 >>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<
 >>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 153.20 DOWNSTREAM(FEET) = 152.60
 FLOW LENGTH(FEET) = 80.00 MANNING'S N = 0.013
 ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
 DEPTH OF FLOW IN 18.0 INCH PIPE IS 7.7 INCHES
 PIPE-FLOW VELOCITY(FEET/SEC.) = 4.68

ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 3.39
PIPE TRAVEL TIME(MIN.) = 0.28 Tc(MIN.) = 8.15
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 207.00 = 685.00 FEET.

FLOW PROCESS FROM NODE 207.00 TO NODE 207.00 IS CODE = 81

>>>>>ADDITION OF SUBAREA TO MAINLINE PEAK FLOW<<<<<

=====

MAINLINE Tc(MIN.) = 8.15
* 2 YEAR RAINFALL INTENSITY(INCH/HR) = 1.710
SUBAREA LOSS RATE DATA(AMC II):

DEVELOPMENT TYPE/ LAND USE	SCS SOIL GROUP	AREA (ACRES)	Fp (INCH/HR)	Ap (DECIMAL)	SCS CN
APARTMENTS	C	0.49	0.25	0.200	69

SUBAREA AVERAGE PERVIOUS LOSS RATE, Fp(INCH/HR) = 0.25
SUBAREA AVERAGE PERVIOUS AREA FRACTION, Ap = 0.200
SUBAREA AREA(ACRES) = 0.49 SUBAREA RUNOFF(CFS) = 0.73
EFFECTIVE AREA(ACRES) = 2.71 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.20
TOTAL AREA(ACRES) = 2.7 PEAK FLOW RATE(CFS) = 4.05

FLOW PROCESS FROM NODE 207.00 TO NODE 208.00 IS CODE = 31

>>>>>COMPUTE PIPE-FLOW TRAVEL TIME THRU SUBAREA<<<<<

>>>>>USING COMPUTER-ESTIMATED PIPESIZE (NON-PRESSURE FLOW)<<<<<

=====

ELEVATION DATA: UPSTREAM(FEET) = 152.60 DOWNSTREAM(FEET) = 151.80
FLOW LENGTH(FEET) = 50.00 MANNING'S N = 0.013
ESTIMATED PIPE DIAMETER(INCH) INCREASED TO 18.000
DEPTH OF FLOW IN 18.0 INCH PIPE IS 6.9 INCHES
PIPE-FLOW VELOCITY(FEET/SEC.) = 6.48
ESTIMATED PIPE DIAMETER(INCH) = 18.00 NUMBER OF PIPES = 1
PIPE-FLOW(CFS) = 4.05
PIPE TRAVEL TIME(MIN.) = 0.13 Tc(MIN.) = 8.28
LONGEST FLOWPATH FROM NODE 200.00 TO NODE 208.00 = 735.00 FEET.

END OF STUDY SUMMARY:

TOTAL AREA(ACRES) = 2.7 TC(MIN.) = 8.28
EFFECTIVE AREA(ACRES) = 2.71 AREA-AVERAGED Fm(INCH/HR) = 0.05
AREA-AVERAGED Fp(INCH/HR) = 0.25 AREA-AVERAGED Ap = 0.200
PEAK FLOW RATE(CFS) = 4.05

END OF RATIONAL METHOD ANALYSIS



APPENDIX G

TRAFFIC STUDY

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TRAFFIC STUDY

**OUR LADY OF PEACE CHURCH/RESIDENTIAL
IRVINE, CALIFORNIA
PLANNING AREA 8
NORTHWOOD**

CASE FILE NUMBER

00954715-PTT

This Traffic Study has been prepared under the supervision of
Ambarish Mukherjee, P.E.



LSA

January 2026

TRAFFIC STUDY

**OUR LADY OF PEACE CHURCH/RESIDENTIAL
IRVINE, CALIFORNIA
PLANNING AREA 8
NORTHWOOD**

**CASE FILE NUMBER
00954715-PTT**

Submitted to:

Roman Catholic Diocese of Orange
13280 Chapman Avenue
Garden Grove, California 92840

Prepared by:

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3210 El Camino Real, Suite 100
Irvine, California 92602
(949) 553-0666

Project No. 20241514



January 2026

ERRATA

A Traffic Study Scope of Work was prepared for the Our Lady of Peace project and approved by City staff on June 5, 2024. The project description at that time was as follows:

The proposed project will replace the existing church building (7,128 square feet [sf]) with the proposed 36,647 sf church (including a 15,942 sf church facility, 17,280 sf sanctuary, and 3,425 sf rectory) and 68 multi-family residential dwelling units. The proposed church use with associated parking spaces would be constructed on the northern half of the site, and the proposed residential use with parking would be developed on the southern half of the project site.

The project description has changed since approval of the scope of work. Specifically, the building square footage of the church has increased. The new project description is:

The proposed project will replace the existing church building (7,128 square feet [sf]) with the proposed 45,521 sf church (including a 23,966 sf church facility with a barium located within the basement, a 17,450 sf sanctuary, and a 4,105 sf rectory) and 68 multi-family residential dwelling units (9 of which are designated as affordable housing units). The proposed church use with underground parking spaces would be constructed on the northern half of the site approximately 3.1 acres, and the proposed residential use with surface parking would be developed on the southern half of the project site, approximately 2.9 acres.

The *Transportation Design Procedures* (TDP) evaluation and California Environmental Quality Act (CEQA) transportation impact (vehicle miles traveled [VMT]) analysis included in this Traffic Study are based on the latest project description.

EXECUTIVE SUMMARY

The purpose of this Traffic Study is to determine potential Short-Term, Long-Range, and Buildout level of service (LOS) impacts and California Environmental Quality Act (CEQA) transportation impacts (vehicle miles traveled [VMT]) resulting from the proposed Our Lady of Peace Church/Residential Project (project) at 14010 Remington in Northwood (Planning Area 8 [PA 8]) in Irvine, California.

The proposed project will replace the existing church building (7,128 square feet [sf]) with the proposed 45,521 sf church (including a 23,966 sf church facility featuring a columbarium located within the basement, a 17,450 sf sanctuary, and a 4,105 sf rectory) and 68 multi-family residential dwelling units (9 of which are designated as affordable housing units). The proposed church use with underground parking spaces would be constructed on the northern half of the site approximately 3.1 acres, and the proposed residential use with surface parking would be developed on the southern half of the project site approximately 2.9 acres.

Entitlement has been previously approved by the City of Irvine (City) to accommodate a 57,650 sf church on the project site. For LOS analysis purposes, only 68 multi-family residential dwelling units were analyzed because the proposed 45,521 sf church use was already included in the approved entitlement. As mentioned previously, the proposed church facility would include a columbarium located within the basement. The columbarium serves as storage space for cremated remains and is considered an accessory component to the church services. Trips associated with the columbarium are expected to be minimal and would generally occur alongside regular church activities. As such the columbarium would not generate additional vehicle trips beyond those already associated with the church use and is considered to have a negligible effect on the project trip generation. For access analysis purposes, the net difference in trips between the proposed project (including both church and residential uses) and the existing use on site was analyzed.

Additionally, the City will install a new traffic signal at the intersection of Remington/Trabuco Road, which is a Capital Improvement Program (CIP) project (No. 331802) adjacent to the project site, and this improvement is currently in the design phase and estimated to be completed by Summer 2026, given that the project schedule does not change. Therefore, this CIP intersection improvement was incorporated in the LOS analysis (future conditions) and access analysis.

The project site is in Traffic Analysis Zone (TAZ) 97 (TransCAD version of the Irvine Transportation Analysis Model [ITAM TC])/TAZ 96 (Irvine Transportation Analysis Model [ITAM] 15). Access to the project site will continue to be provided via a full-access driveway on Remington and a new right-in/right-out (RIRO) driveway on Trabuco Road. Both proposed church and residential land uses will be able to access each driveway. The church portion of the site will be secured by vehicular gates, including access to underground parking areas. The gates for the site will open daily from 6:00 a.m. to 10:00 p.m., including during a.m. and p.m. peak hours and church services. For security, gates will close nightly from 10:00 p.m. to 6:00 a.m. Parishioners visiting the adoration chapel outside of regular hours will be provided an entry code.

Based on the City's *Traffic Study Guidelines* (March 21, 2023), a Comprehensive Traffic Study is required to evaluate the cumulative effects with buildout of the proposed project.

This study focuses on the daily, a.m. peak-hour, and p.m. peak-hour LOS at 6 intersections and 8 roadway segments. The project LOS impacts were determined based on analysis of the following scenarios:

- Short-Term Interim-Year Approved Baseline
- Short-Term Interim-Year Approved Baseline Plus Project
- Long-Range Approved Baseline
- Long-Range Approved Baseline Plus Project
- Buildout Approved Baseline
- Buildout Approved Baseline Plus Project

Based on the results of this Traffic Study, the proposed project can be implemented without impacting the design or operation of the surrounding roadway system. Evaluation of LOS shows that the addition of project traffic to Short-Term, Long-Range, and Buildout Approved traffic volumes would not adversely affect the study area intersections or roadways according to the City's performance criteria.

Project design features were also analyzed based on the City *Transportation Design Procedures* (TDPs). As a result, no impacts to vehicle access were identified using the following design guidelines:

- **TDP-1:** Turn-lane Pocket Lengths
- **TDP-3:** Left-Turn In/Out Access
- **TDP-4:** Right-Turn Lanes at Uncontrolled Driveways
- **TDP-10:** Distances between Driveways and Intersections
- **TDP-14:** Driveway Lengths

The proposed project would maintain the existing walkways/sidewalks and on-street (Class II) bicycle lanes in the vicinity of the project site. Irvine CONNECT bus stops are provided at Yale Avenue/Trabuco Road and Yale Avenue/Roosevelt; Orange County Transportation Authority (OCTA) bus stops are provided at Jeffrey Road/Trabuco Road for OCTA Route 167.

Based on the City's *Traffic Study Guidelines*, the proposed and previously approved Church use qualifies as a local-serving use; therefore it is screened out from further VMT analysis. As such, the church component is presumed to have a less than significant CEQA transportation impact.

The proposed 68 multi-family residential dwelling units do not meet any of the City's adopted VMT screening criteria. As such, a detailed VMT analysis was conducted using the City's ITAM traffic model. The nine affordable units were screened out of the Project VMT per the City's methodology. Based on the City's *Traffic Study Guidelines* and the project's VMT analysis, the residential component is required to reduce its VMT Rate by 31.3 percent and is therefore presumed to have a significant CEQA transportation impact. One applicable VMT mitigation measure identified in the

CAPCOA Handbook is T-18 (Provide Pedestrian Network Improvement), similar to the City's Bicycle and Pedestrian Network Connectivity mitigation measure identified in the City's *Traffic Study Guidelines*. Due to the overlap between these strategies, the City's Bicycle and Pedestrian Network Connectivity mitigation measure was considered. Assuming the mitigation strategy could achieve its maximum VMT reduction value, the implementation of the measure could reduce the VMT rate by 2.5 percent, which is less than the projects required reduction of 31.3 percent. As a result, the proposed project will have a significant unavoidable VMT impact. Therefore, a Statement of Overriding Considerations must be considered for adoption and is a part of the CEQA document prepared for this project.

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- A: APPROVED SCOPE OF WORK
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- C: ITAM SELECT ZONE ASSIGNMENTS
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LIST OF ABBREVIATIONS AND ACRONYMS

ADT	average daily traffic
CEQA	California Environmental Quality Act
CIP	Capital Improvement Program
City	City of Irvine
EB	eastbound
EIR	Environmental Impact Report
ft	foot/feet
HCM	<i>Highway Capacity Manual</i>
ICU	intersection capacity utilization
ITAM	Irvine Transportation Analysis Model
ITAM TC	TransCAD version of the Irvine Transportation Analysis Model
ITE	Institute of Transportation Engineers
JOST	Jeffrey Open Space Trail
LOS	level(s) of service
mph	mile(s) per hour
OCTA	Orange County Transportation Authority
OCTAM	Orange County Traffic Analysis Model
OPR	Governor's Office of Planning and Research
PA	Planning Area
project	Our Lady of Peace Church/Residential Project
RIRO	right-in/right-out
sf	square foot/feet

TAZ	Traffic Analysis Zone
TDM	Transportation Demand Management
TDP	Transportation Design Procedures
TRB	Transportation Research Board
v/c	volume-to-capacity
VMT	vehicle miles traveled
vph	vehicles per hour
WB	westbound

TRAFFIC STUDY OUR LADY OF PEACE CHURCH/RESIDENTIAL

LSA has prepared the following Traffic Study to identify the potential Short-Term, Long-Range, and Buildout level of service (LOS) impacts and California Environmental Quality Act (CEQA) transportation impacts (vehicle miles traveled [VMT]) resulting from the proposed Our Lady of Peace Church/Residential Project (project) at 14010 Remington in Northwood (Planning Area 8 [PA 8]) in Irvine, California. The proposed project will replace the existing church building (7,128 square feet [sf]) with the proposed 45,521 sf church (including a 23,966 sf church facility featuring a columbarium located within the basement, 17,450 sf sanctuary, and 4,105 sf rectory) and 68 multi-family residential dwelling units. The proposed church use with underground parking spaces would be constructed on the northern half of the site and the proposed residential use with parking would be developed on the southern half of the project site.

Entitlement has been previously approved by the City of Irvine (City) to accommodate a 57,650 sf church on the project site. For LOS analysis purposes, only 68 multi-family residential dwelling units were analyzed because the proposed 45,521 sf church use was already included in the approved entitlement. For access analysis purposes, the net difference in trips between the proposed project (including both church and residential uses) and the existing use on site was analyzed.

Additionally, the City will install a new traffic signal at the intersection of Remington/Trabuco Road, which is a Capital Improvement Program (CIP) project (No. 331802) adjacent to the project site, and this improvement is currently in the design phase and estimated to be completed by Summer 2026, given that the project schedule does not change. Therefore, this CIP intersection improvement was incorporated in the LOS analysis (future conditions) and access analysis.

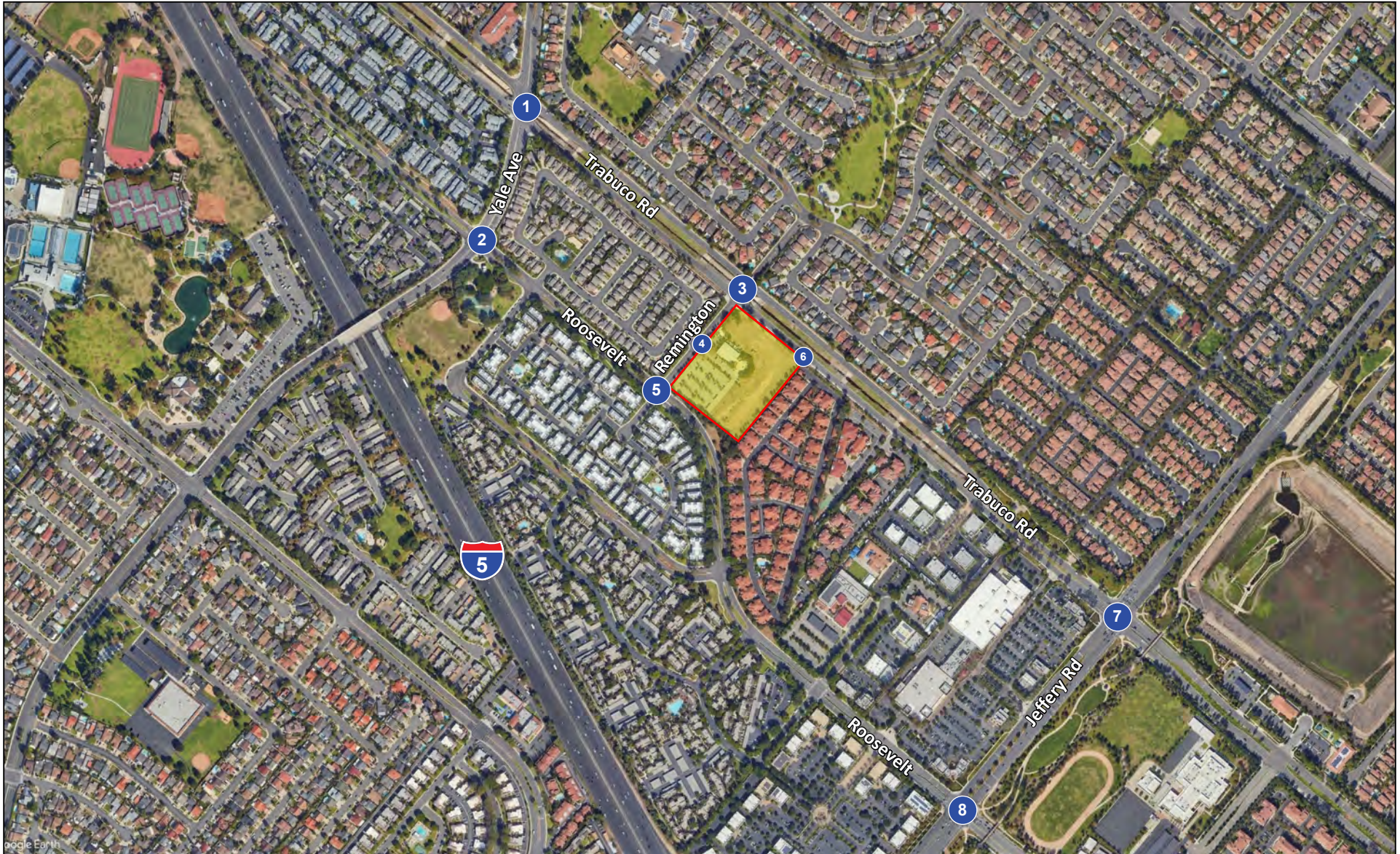
LSA has prepared this Traffic Study consistent with the approved Scope of Work, dated June 5, 2024 (provided in Appendix A), with exception to the building square footage as noted in the Errata. This Traffic Study was prepared in accordance with the applicable sections of the City's *Traffic Study Guidelines* (March 21, 2023) and *Transportation Design Procedures* (TDPs; February 2007).

INTRODUCTION

Project Site

The project site is an approximately 6-acre property that is located on the southeast corner of Remington and Trabuco Road, as shown on Figure 1. A church building (7,128 sf) currently exists on the project site along with a parking lot and courtyard, which cover approximately 40 percent of the project site. The remaining portion of the project site is undeveloped with vacant land and trees abutting the pedestrian sidewalks.

The proposed project will replace the existing church building (7,128 sf) with the proposed 45,521 sf church (including a 23,966 sf church facility with a columbarium located within the basement, 17,450 sf sanctuary, and 4,105 sf rectory) and 68 multi-family residential dwelling units (9 of which are designated as affordable housing units). The proposed church use with underground parking spaces would be constructed on the northern half of the site, and the proposed residential use with parking would be developed on the southern half of the project site. Entitlement has been previously approved by the City to accommodate a 57,650 sf church on the project site.



LSA

- LEGEND
- Project Area
 - # Study Area Intersection



0 270 540

FEET

SOURCE: Google Earth

I:\20241514\G\Project_Location.ai (3/12/2024)

FIGURE 1

*Our Lady of Peace Church and Residential
Project Location and Study Area Intersections*

Access to the project site will continue to be provided via a full-access driveway on Remington (across from Danville Street) and a new right-in/right-out (RIRO) driveway on Trabuco Road (eastern edge of the property). Both the proposed church and residential land uses will be able to access each driveway. The church portion of the site will be secured by vehicular gates, including access to underground parking areas. The gates for the site will open daily from 6:00 a.m. to 10:00 p.m., including during a.m. and p.m. peak hours and church services. For security, gates will close nightly from 10:00 p.m. to 6:00 a.m. A site plan of the proposed project is provided in Figure 2.

Study Area

As shown on Figure 1, the study area includes the following intersections:

1. Yale Avenue/Trabuco Road
2. Yale Avenue/Roosevelt
3. Remington/Trabuco Road
4. Remington/Project Driveway-Danville Street
5. Remington/Roosevelt
6. Project RIRO Driveway/Trabuco Road
7. Jeffrey Road/Trabuco Road
8. Jeffrey Road/Roosevelt

Roadway segments between each study area intersection have been analyzed in this study. Project driveways are evaluated as part of the Access Analysis section provided later in this report.

Existing, General Plan, and Proposed Site Uses

The current *2045 Irvine General Plan (2024)* designation for the site is Medium-High Density Residential. The current zoning is 2.4C Medium-High Density Residential.

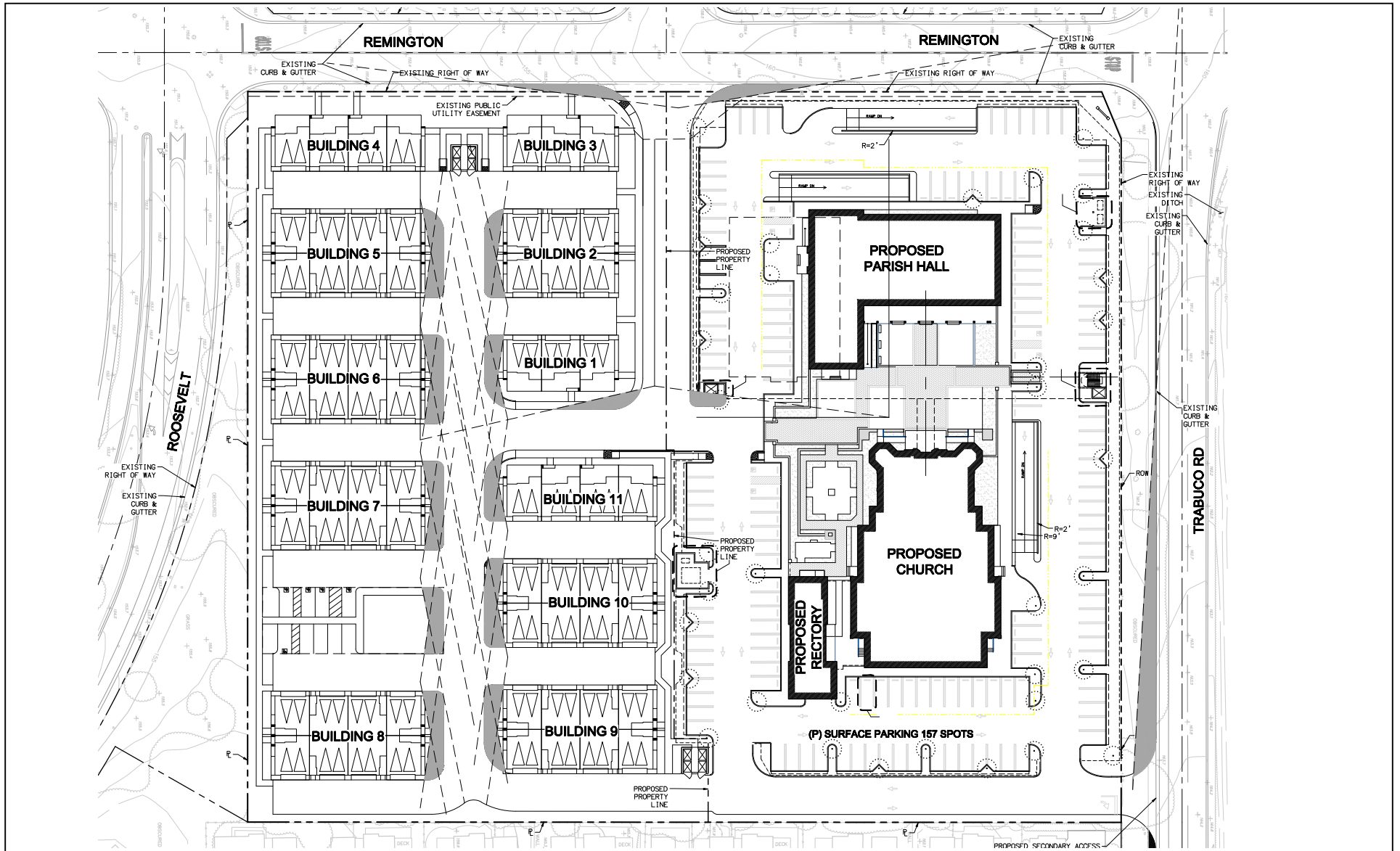
PERFORMANCE CRITERIA

To determine the peak-hour operations at signalized intersections within the study area, the intersection capacity utilization (ICU) methodology was used. The ICU methodology compares the volume-to-capacity (v/c) ratios of conflicting turn movements at an intersection, sums these critical conflicting v/c ratios for each intersection approach, and determines the overall ICU. The resulting ICU is expressed in terms of LOS, where LOS A represents free-flow activity and LOS F represents overcapacity operation. Parameters set by the City for ICU calculations, including lane capacity, right-turn treatments, and clearance intervals, are included in this analysis.

According to the City's *Traffic Study Guidelines* and consistent with the City's General Plan, LOS at an intersection or roadway in this study area is considered to be unsatisfactory when the ICU (or v/c ratio) exceeds 0.90 (i.e., LOS D). The relationship of ICU to LOS is demonstrated in the following table:

Level of Service	ICU
A	0.00–0.60
B	0.61–0.70
C	0.71–0.80
D	0.81–0.90
E	0.91–1.00
F	>1.00

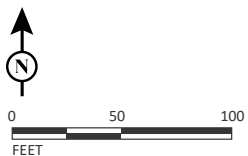
Source: City of Irvine *Traffic Study Guidelines* (2023).
ICU = intersection capacity utilization



LSA

Note: Details of the site plan access to public facilities are subject to review and approval by the City Engineer.

FIGURE 2



SOURCE: PROACTIVE ENGINEERING CONSULTANTS, September 2025

I:\20241514\G\Site_Plan_v3.ai (10/17/2025)

Our Lady of Peace Church and Residential
Site Plan

In addition to the ICU methodology of calculating intersection LOS, an operational analysis was also prepared based on the *Highway Capacity Manual* (HCM), 7th Edition (Transportation Research Board [TRB] 2022), methodology to determine the LOS at unsignalized intersections within the study area. The HCM, 7th Edition, intersection methodology presents LOS in terms of total intersection delay and approach delay of the major and minor streets (in seconds per vehicle). The resulting delay is expressed in terms of LOS, similar to the ICU methodology. The following table demonstrates the relationship of delay to LOS.

Level of Service	Unsignalized Intersection Delay (seconds/vehicle)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

Source: *Highway Capacity Manual* (Transportation Research Board 2017).

Roadway link v/c ratios were determined using the City's theoretical daily capacities. Facility types were taken from the City's *2045 Irvine General Plan*. The following table illustrates theoretical daily capacities (as contained in the City's *Traffic Study Guidelines*) for roadways within the study area:

Facility Type	Number of Lanes	Theoretical Capacity (vehicles per day)
Major Highway	8	72,000
	7	63,000
	6	54,000
Primary Highway	4	32,000
Secondary Highway	4	28,000
Commuter	2	13,000

Sources: *2045 Irvine General Plan Circulation Element* (City of Irvine 2024) and *Traffic Study Guidelines* (City of Irvine 2023).

Note: The theoretical capacity of a seven-lane Major Highway is interpolated from the theoretical capacities of a six-lane and an eight-lane Major Highway.

Using the City's adopted methodologies (ICU for signalized intersections and v/c ratios for roadway links), a project LOS impact occurs if the project causes a signalized intersection or roadway link to exceed the acceptable LOS or if the signalized intersection or roadway link in question exceeds the acceptable LOS in the Baseline condition and the effect of the project is greater than or equal to 0.02.

For roadway links projected to be deficient based on ADT v/c ratios, the City's peak-hour link analysis (per the adopted City's *Traffic Study Guidelines*) is used to evaluate roadway capacity conditions and the need for improvement, if necessary. The peak-hour link analysis determines directional a.m. and p.m. peak-hour v/c ratios for each link that is projected to exceed LOS standards. The peak-hour capacity is determined by multiplying the midblock number of lanes for each direction by a lane capacity of 1,600 vehicles per hour (vph). Where the distance between controlled intersections is one or more miles, the midblock number of lanes shall be multiplied by a lane capacity of 2,000 vph. Project mitigation will be required to bring the LOS back to the acceptable LOS or to the LOS baseline if the baseline exceeds the acceptable LOS.

The City's *Traffic Study Guidelines* do not have performance criteria for unsignalized intersections. If an unsignalized intersection operates at unsatisfactory LOS E (greater than 35 seconds of delay per vehicle) in the Baseline condition and project trips are added, a peak-hour signal warrant analysis (per TDP-12) will be conducted to determine if a traffic signal is required. A peak-hour signal warrant analysis will also be conducted if an unsignalized intersection operates at satisfactory LOS in the Baseline condition and additional project trips cause the intersection to operate at unsatisfactory LOS E.

The project driveways are analyzed based on the design criteria recommended in the City's TDPs. The TDPs establish uniform policies and procedures for reviewing traffic design plans within Irvine. The TDPs were used to evaluate the roadway design features that may be impacted by the proposed project. A description and analysis of each applicable design criterion are provided later in this Traffic Study.

ANALYSIS METHODOLOGY AND APPROACH

The TransCAD version of the Irvine Transportation Analysis Model (ITAM TC) was used to forecast Short-Term, Long-Range, and Buildout Approved conditions with and without the proposed project. The Approved condition represents each application for development currently approved by the City.

The future conditions are based on the funded roadway network and land use assumptions envisioned to be in place by the respective horizon year. This future traffic analysis requires 6 ITAM TC runs. These ITAM TC runs are examined with and without the proposed project in the Approved development scenario.

LSA prepared the forecast data for this proposed project based on the ITAM TC. The scenarios examined for each future condition are as follows:

1. **Short-Term Interim-Year Approved Baseline:** The ITAM TC run includes each application for development approved by the City, including the previously approved 57,650 sf church use. Any additional development beyond the approved uses for the proposed project that might be assumed in the ITAM TC was deleted for the analysis of this scenario.
2. **Short-Term Interim-Year Approved Baseline Plus Project:** The ITAM TC run includes each application for development approved by the City. This scenario includes the previously approved 57,650 sf church use along (as reflected in the baseline) with the addition of 68 multi-family residential dwelling units in TAZ 97 (ITAM TC)/TAZ 96 (Irvine Transportation Analysis Model [ITAM] 15).
3. **Long-Range Approved Baseline:** The ITAM TC run includes each application for development approved by the City, including the previously approved 57,650 sf church use. Any additional development beyond the approved uses for the proposed project that might be assumed in the ITAM TC was deleted for the analysis of this scenario.
4. **Long-Range Approved Baseline Plus Project:** The ITAM TC run includes each application for development approved by the City. The proposed project includes the previously approved 57,650 sf church use (as reflected in the baseline) along with the addition of 68 multi-family

residential dwelling units in TAZ 97 (ITAM TC)/TAZ 96 (Irvine Transportation Analysis Model [ITAM] 15).

5. **Buildout Approved Baseline:** The ITAM TC run includes each application for development approved by the City, including the previously approved 57,650 sf church use. Any additional development beyond the approved uses for the proposed project that might be assumed in the ITAM TC was deleted for the analysis of this scenario.
6. **Buildout Approved Baseline Plus Project:** The ITAM TC run includes each application for development approved by the City. The proposed project includes the previously approved 57,650 sf church use (as reflected in the baseline) along with the addition of 68 multi-family residential dwelling units in TAZ 97 (ITAM TC)/TAZ 96 (Irvine Transportation Analysis Model [ITAM] 15).

Project LOS impacts are identified at study area intersections for the Short-Term, Long-Range, and Buildout Approved conditions, assuming improvements to the circulation system identified by the City. Daily traffic volumes and v/c ratios are also presented in the analysis for the study area roadway segments for each scenario. Traffic volumes and calculations for the Short-Term, Long-Range, and Buildout Approved scenarios are referenced throughout this Traffic Study and are provided in Appendix B.

PROPOSED PROJECT TRAFFIC

Trip Generation

The project trips assigned to the study area intersections and the roadway segments for the Short-Term, Long-Range, and Buildout Approved conditions are based on the ITAM TC, which is the Orange County Transportation Authority (OCTA) sanctioned subarea model for the City. All modeling steps (including trip generation, distribution, and assignment) are consistent with the Orange County Traffic Analysis Model (OCTAM). Project traffic, as well as cumulative traffic and growth within Irvine and adjacent cities (i.e., Santa Ana, Tustin, and Newport Beach), is included in the model runs. ITAM TC is the City's approved traffic forecasting tool to use for evaluation of project-related circulation effects within the City.

The ITAM trip rates are used for LOS analysis purposes (i.e., evaluation of study area intersections and roadway segments under Short-Term, Long-Range, and Buildout Approved conditions).

Trip rates contained in the Institute of Transportation Engineers (ITE) *Trip Generation Manual*, 11th Edition (2021) for Land Use 220 (Multifamily Housing [Low Rise]) and Land Use 560 (Church) are used for access analysis purposes. The land use-based ITE trip rates are used for evaluation of the City's TDPs, which are provided later in this Traffic Study.

Table A presents the trip generation for the proposed project. As this table indicates, the existing 7,128 sf of church use generates 54 daily trips, including 2 a.m. peak-hour trips (1 inbound and 1 outbound) and 3 p.m. peak-hour trips (1 inbound and 2 outbound). The proposed 45,521 sf church and 68 multi-family residential dwelling units would generate 804 daily trips, including 42 a.m. peak-hour trips (16 inbound and 26 outbound) and 57 p.m. peak-hour trips (32 inbound and 25 outbound).

Table A: Project Trip Generation Summary

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates ¹									
Church		tsf	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Multifamily Low-Rise		du	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Project Trip Generation									
Multifamily Low-Rise	68	du	458	7	20	27	22	13	35
Church	45.521	tsf	346	9	6	15	10	12	22
Total			804	16	26	42	32	25	57
Existing Trip Generation									
Church	7.128	tsf	54	1	1	2	1	2	3
Project-Existing Trip Generation			750	15	25	40	31	23	54

¹ Trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 11th Edition (2021).

Land Use Code 560 - Church

Land Use Code 220 - Multifamily Housing (Low Rise) - 2 or 3 Levels

du = dwelling unit

tsf = thousand square feet

The net trip generation of the proposed project is 750 daily trips, including 40 a.m. peak-hour (15 inbound and 25 outbound) and 54 p.m. peak-hour trips (31 inbound and 23 outbound).

As mentioned before, entitlement has been previously approved by the City to accommodate a 57,650 sf church on the project site. Since the proposed 45,521 sf of church use was already included in the approved entitlement, the LOS impacts in the Short-Term, Long-Range, and Buildout scenarios analyze the proposed 68 multi-family residential dwelling units only. The access analysis, discussed later in this Traffic Study, analyzes the net difference in trips between the proposed project (including both church and residential uses) and the existing uses on site, as seen in the Project Trip Generation Summary table above.

Trip Distribution and Assignment

Directions of approach to and departure from the site are based on the ITAM TC select zone assignments for project TAZ 97 (ITAM TC) for a.m. peak-hour, p.m. peak-hour, and daily conditions under each horizon year. The model data, prepared by LSA, represent the Baseline traffic volumes plus the trips generated by the proposed project under each project scenario. The ITAM TC Buildout Approved Baseline Plus Project select zone assignments are provided in Appendix C.

The a.m. and p.m. peak-hour Buildout Approved Baseline Plus Project select zone assignments for TAZ 97 (ITAM TC) were used to distribute and assign project trips in and out of the site. As discussed with City staff, the inbound distribution at the RIRO driveway on Trabuco Road were adjusted to 5 percent for both a.m. and p.m. peak hours. This minor adjustment does not impact the regional distribution generated from the ITAM model. The total inbound percentage was split approximately 5 percent to the RIRO driveway on Trabuco Road and 95 percent to the full-access driveway on Remington in both a.m. and p.m. peak hours. The total outbound percentage was split approximately 21 percent in the a.m. peak hour and 23 percent in the p.m. peak hour to the RIRO driveway on Trabuco Road and 79 percent in the a.m. peak hour and 77 percent in the p.m. peak hour to the full-access driveway on Remington.

EXISTING CONDITIONS

Existing Site Uses

The project site is designated as Medium-High Density Residential in the General Plan and zoned as 2.4C Medium-High Density Residential. The project site is located on the southeast corner of Remington and Trabuco Road.

Access to the project site will continue to be provided via a full-access driveway on Remington and a new RIRO driveway on Trabuco Road. The church portion of the site will be secured by vehicular gates, including access to underground parking areas. The gates for the site will open daily from 6:00 a.m. to 10:00 p.m., including during a.m. and p.m. peak hours and church services. For security, gates will close nightly from 10:00 p.m. to 6:00 a.m.

Existing Roadways and Intersections

Key roadways in the vicinity of the proposed project are:

- **Yale Avenue:** Yale Avenue is four-lane, north-south Primary Highway west of the project site. The posted speed limit is 45 miles per hour (mph). Sidewalks and Class II bicycle lanes are provided on both sides of Yale Avenue, and on-street parking is prohibited on both sides of this roadway. Irvine CONNECT has bus stops along Yale Avenue near the project site.
- **Remington:** Remington is a two-lane, north-south local roadway west of the project site. Direct project access via a full-access driveway is provided on Remington across from Danville Street. The prima facie speed limit is 25 mph. Sidewalks are provided on both sides of Remington, and on-street parking is prohibited on both sides of this roadway.
- **Jeffrey Road:** Jeffrey Road is a six-lane, north-south Major Highway east of the project site. The posted speed limit is 45 to 50 mph. Sidewalks and Class II bicycle lanes are provided on the west side of Jeffrey Road, and on-street parking is prohibited on both sides of this roadway. A Class II bicycle lane and the Jeffrey Open Space Trail (JOST) are located on the east side of Jeffrey Road. OCTA has bus stops along Jeffrey Road near the project site.
- **Trabuco Road:** Trabuco Road is a four-lane, east-west Primary Highway north of the project site. Direct project access via a new RIRO driveway is provided on Trabuco Road. The posted speed limit is 50 mph. Sidewalks and Class II bicycle lanes are provided on both sides of Trabuco Road, and on-street parking is prohibited on both sides of this roadway.
- **Roosevelt:** Roosevelt is an east-west local roadway south of the project site. The segment in between Yale Avenue and Truman Street has two lanes, and the segment in between Truman Street and Jeffrey Road has four lanes. The posted speed limit is 40 mph. Sidewalks and Class II bicycle lanes are provided on both sides of Roosevelt, and on-street parking is prohibited on both sides of this roadway.

Existing Traffic Volumes and LOS

Counts Unlimited conducted Existing (February and May 2024) traffic counts for the study area intersections and roadway segments, and Appendix D provides the Existing count data. For the intersections with 2-day counts, the average of the 2-day counts was used.

As previously discussed, the ICU methodology was used to determine the LOS at signalized intersections, and the HCM methodology was used to determine the LOS at unsignalized intersections. The ICU and HCM worksheets are provided in Appendices B and E, respectively. Daily traffic volumes and v/c ratios were evaluated to identify the LOS at the roadway segments.

A summary of Existing (Baseline) intersection LOS is presented in Table B. As this table indicates, all study area intersections currently operate at satisfactory LOS, except for the unsignalized intersection of Remington/Trabuco Road (LOS F in the a.m. and LOS E in the p.m. peak hour). However, as mentioned previously, the City will install a new traffic signal at the intersection of Remington/Trabuco Road, which is a CIP project (No. 331802) adjacent to the project site. This improvement is already in the design phase and estimated to be completed by 2025. With this improvement, the intersection of Remington/Trabuco Road would operate at satisfactory LOS A in the future conditions, as demonstrated later in this study. Existing (Baseline) average daily traffic (ADT) volumes and v/c ratios are presented in Table C. As this table indicates, all study area roadway segments currently operate at satisfactory LOS.

Table B: Existing Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline			
			AM Peak Hour		PM Peak Hour	
			ICU / Delay	LOS	ICU / Delay	LOS
1	255	Yale Avenue/Trabuco Road	0.40	A	0.41	A
2	257	Yale Avenue/Roosevelt	0.40	A	0.48	A
3	256	Remington/Trabuco Road <i>HCM</i>	>50.0	F	40.0	E
5	258	Remington/Roosevelt <i>HCM</i>	17.2	C	18.8	C
7	285	Jeffrey Road/Trabuco Road	0.52	A	0.60	A
8	286	Jeffrey Road/Roosevelt	0.73	C	0.59	A

Δ = change

 = exceeds City's level of service (LOS) criteria

Delay is reported in seconds/vehicle.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

Table C: Existing ADT Volumes and V/C Ratios

ITAM Link ID	Roadway	Segment	Capacity	Baseline		
				ADT	V/C	LOS
22134	Yale Avenue	Trabuco Road to Roosevelt	32,000	12,374	0.39	A
41981	Remington	Trabuco Road to Roosevelt	13,000	2,358	0.18	A
22138	Jeffrey Road	Trabuco Road to Roosevelt	54,000	36,341	0.67	B
22133	Trabuco Road	Yale Avenue to Remington	32,000	10,928	0.34	A
22137	Trabuco Road	Remington to Jeffrey Road	32,000	11,610	0.36	A
41980	Roosevelt	Yale Avenue to Remington	13,000	6,792	0.52	A
42418	Roosevelt	Remington to Truman Street	13,000	7,866	0.61	B
41605	Roosevelt	Truman Street to Jeffrey Road	26,000	12,533	0.48	A

Δ = change

ADT = average daily trips

ITAM = Irvine Transportation Analysis Model

V/C = volume-to-capacity ratio

FUTURE CONDITIONS

The following discussion presents the results of the Short-Term, Long-Range, and Buildout analysis for Baseline (No Project) and Plus Project conditions. It should be noted that the City will install a new traffic signal at the intersection of Remington/Trabuco Road, which is a CIP project (No. 331802) adjacent to the project site. This improvement is currently in the design phase and estimated to be completed by Summer 2026, given that the project schedule does not change. Therefore, this CIP intersection improvement was included in the future conditions.

Short-Term Approved Baseline and Plus Project Traffic Volumes and LOS

Table D presents a summary of the intersection LOS for Short-Term Approved (Baseline and Plus Project) conditions. As this table indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jeffrey Road/Roosevelt (LOS E). With the addition of the proposed project in the Short-Term Approved condition, all study area intersections are forecast to continue operating at satisfactory LOS, with the exception of the previously stated study area intersection. However, the intersection v/c ratio does not increase by 0.02 or greater at this location. Therefore, the proposed project can be implemented in a Short-Term Approved condition with no peak-hour LOS impacts.

The ADT volumes and v/c ratios for Short-Term Approved (Baseline and Plus Project) conditions are presented in Table E. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. With the addition of the proposed project in the Short-Term Approved condition, all study area roadway segments are forecast to continue operating at satisfactory LOS. Therefore, no daily LOS impacts are created on roadway segments with implementation of the proposed project in the Short-Term Approved condition.

Long-Range Approved Baseline and Plus Project Traffic Volumes and LOS

Table F presents a summary of the intersection LOS for the Long-Range Approved (Baseline and Plus Project) conditions. As this indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition, with the exception of Jeffrey Road/Roosevelt (LOS E). With the addition of the proposed project in the Long-Range Approved condition, all study area intersections would continue to operate at satisfactory LOS, with the exception of the previously stated study area intersection. However, the intersection v/c ratio does not increase by 0.02 or greater at this location. Therefore, the proposed project can be implemented in a Long-Range Approved condition with no peak-hour LOS impacts.

The ADT volumes and v/c ratios for the Long-Range Approved (Baseline and Plus Project) conditions are presented in Table G. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. With the addition of the proposed project in the Long-Range Approved condition, all study area roadway segments would continue to operate at satisfactory LOS. Therefore, no daily LOS impacts are created on roadway segments with implementation of the proposed project in the Long-Range Approved condition.

Table D: Short-Term Approved Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		Significant LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU or Delay		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	255	Yale Avenue/Trabuco Road	0.43	A	0.51	A	0.43	A	0.51	A	0.00	0.00	No
2	257	Yale Avenue/Roosevelt	0.43	A	0.49	A	0.43	A	0.49	A	0.00	0.00	No
3	256	Remington/Trabuco Road	0.42	A	0.35	A	0.41	A	0.35	A	(0.01)	0.00	No
5	258	Remington/Roosevelt	13.5	B	13.3	B	13.6	B	13.3	B	0.1	0.0	No
7	285	Jeffrey Road/Trabuco Road	0.61	B	0.75	C	0.61	B	0.75	A	0.00	0.00	No
8	286	Jeffrey Road/Roosevelt	0.97	E	0.70	B	0.98	E	0.71	C	0.01	0.01	No

Δ = change

 = exceeds City's level of service (LOS) criteria

Delay is reported in seconds/vehicle.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

Table E: Short-Term Approved ADT Volumes and V/C Ratios

ITAM Link ID	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	Significant LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
22134	Yale Avenue	Trabuco Road to Roosevelt	32,000	14,385	0.45	A	14,319	0.45	A	0.00	No
41981	Remington	Trabuco Road to Roosevelt	13,000	8,067	0.62	B	8,160	0.63	B	0.01	No
22138	Jeffrey Road	Trabuco Road to Roosevelt	54,000	42,893	0.79	C	42,977	0.80	C	0.01	No
22133	Trabuco Road	Yale Avenue to Remington	32,000	14,119	0.44	A	14,179	0.44	A	0.00	No
22137	Trabuco Road	Remington to Jeffrey Road	32,000	14,057	0.44	A	14,016	0.44	A	0.00	No
41980	Roosevelt	Yale Avenue to Remington	13,000	9,297	0.72	C	9,310	0.72	C	0.00	No
42418	Roosevelt	Remington to Truman Street	13,000	9,718	0.75	C	9,898	0.76	C	0.01	No
41605	Roosevelt	Truman Street to Jeffrey Road	26,000	13,989	0.54	A	14,142	0.54	A	0.00	No

Δ = change

ADT = average daily trips

ITAM = Irvine Transportation Analysis Model

V/C = volume-to-capacity ratio

Table F: Long-Range Approved Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		Significant LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU or Delay		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	255	Yale Avenue/Trabuco Road	0.45	A	0.50	A	0.44	A	0.50	A	(0.01)	0.00	No
2	257	Yale Avenue/Roosevelt	0.44	A	0.50	A	0.45	A	0.49	A	0.01	(0.01)	No
3	256	Remington/Trabuco Road	0.42	A	0.33	A	0.42	A	0.32	A	0.00	(0.01)	No
5	258	Remington/Roosevelt	13.0	B	13.1	B	13.1	B	13.1	B	0.1	0.0	No
7	285	Jeffrey Road/Trabuco Road	0.51	A	0.70	B	0.50	A	0.70	B	(0.01)	0.00	No
8	286	Jeffrey Road/Roosevelt	0.94	E	0.76	C	0.94	E	0.75	C	0.00	(0.01)	No

Δ = change

 = exceeds City's level of service (LOS) criteria

Delay is reported in seconds/vehicle.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

Table G: Long-Range Approved ADT Volumes and V/C Ratios

ITAM Link ID	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	Significant LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
22134	Yale Avenue	Trabuco Road to Roosevelt	32,000	14,481	0.45	A	14,325	0.45	A	0.00	No
41981	Remington	Trabuco Road to Roosevelt	13,000	7,452	0.57	A	7,598	0.58	A	0.01	No
22138	Jeffrey Road	Trabuco Road to Roosevelt	54,000	41,403	0.77	C	41,436	0.77	C	0.00	No
22133	Trabuco Road	Yale Avenue to Remington	32,000	12,193	0.38	A	12,236	0.38	A	0.00	No
22137	Trabuco Road	Remington to Jeffrey Road	32,000	11,785	0.37	A	11,761	0.37	A	0.00	No
41980	Roosevelt	Yale Avenue to Remington	13,000	8,933	0.69	B	8,993	0.69	B	0.00	No
42418	Roosevelt	Remington to Truman Street	13,000	9,188	0.71	C	9,376	0.72	C	0.01	No
41605	Roosevelt	Truman Street to Jeffrey Road	26,000	13,821	0.53	A	13,996	0.54	A	0.01	No

Δ = change

ADT = average daily trips

ITAM = Irvine Transportation Analysis Model

V/C = volume-to-capacity ratio

Buildout Approved Baseline and Plus Project Traffic Volumes and LOS

Table H presents a summary of the intersection LOS for the Buildout Approved (Baseline and Plus Project) conditions. In the Buildout Scenario, the eastbound right turn movement at Jeffrey Road/Roosevelt is improved from one lane with an overlap to two lanes. As Table H indicates, all study area intersections are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. With the addition of the proposed project in the Buildout Approved condition, all study area intersections would continue to operate at satisfactory LOS. Therefore, the proposed project can be implemented in a Buildout Approved condition with no peak-hour LOS impacts.

The ADT volumes and v/c ratios for the Buildout Approved (Baseline and Plus Project) conditions are presented in Table I. As this table indicates, all study area roadway segments are forecast to operate at satisfactory LOS in the Baseline (No Project) condition. With the addition of the proposed project in the Buildout Approved condition, all study area roadway segments would continue to operate at satisfactory LOS. Therefore, no daily LOS impacts are created on roadway segments with implementation of the proposed project in the Buildout Approved condition.

SPECIAL ISSUES

Access Analysis

Access to the project site will continue to be provided via a full-access driveway on Remington and a new RIRO driveway on Trabuco Road. Both proposed church and residential land uses will be able to access each driveway. The church portion of the site will be secured by vehicular gates, including access to underground parking areas. The gates for the site will open daily from 6:00 a.m. to 10:00 p.m., including during a.m. and p.m. peak hours and church services. For security, gates will close nightly from 10:00 p.m. to 6:00 a.m. In addition, the City will install a new traffic signal at the intersection of Remington/Trabuco Road, which is a CIP project (No. 331802) adjacent to the project site. This improvement is currently in the design phase and estimated to be completed by Summer 2026, given that the project schedule does not change. Therefore, signalization of this intersection was incorporated in the access analysis.

The ITAM select zone outputs were used to identify the regional trip distribution for the project trips. As discussed with City staff, the inbound distribution at the RIRO driveway on Trabuco Road was adjusted to 5 percent for both a.m. and p.m. peak hours. This minor adjustment does not impact the regional distribution generated from the ITAM model. The total inbound percentage was split approximately 5 percent to the RIRO driveway on Trabuco Road and 95 percent to the full-access driveway on Remington in both a.m. and p.m. peak hours. The total outbound percentage was split approximately 21 percent in the a.m. peak hour and 23 percent in the p.m. peak hour to the RIRO driveway on Trabuco Road and 79 percent in the a.m. peak hour and 77 percent in the p.m. peak hour to the full-access driveway on Remington.

The evaluation of the project driveways and adjacent intersections is based on the City's TDP criteria for Existing and Existing Plus Project conditions. Counts Unlimited conducted Existing traffic counts (provided in Appendix D) to establish Baseline (No Project) conditions for purposes of the access analysis. For the intersections with 2-day counts, the average of the 2-day counts was used. Volumes

Table H: Buildout Approved Intersection LOS Summary

Study Area No.	ITAM Node No.	Intersection	Baseline				Plus Project				Peak-Hour Δ		Significant LOS Impact?
			AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		ICU or Delay		
			ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	ICU / Delay	LOS	AM	PM	
1	255	Yale Avenue/Trabuco Road	0.45	A	0.50	A	0.45	A	0.50	A	0.00	0.00	No
2	257	Yale Avenue/Roosevelt	0.46	A	0.50	A	0.46	A	0.49	A	0.00	(0.01)	No
3	256	Remington/Trabuco Road	0.43	A	0.33	A	0.43	A	0.33	A	0.00	0.00	No
5	258	Remington/Roosevelt	13.5	B	13.2	B	13.5	B	13.2	B	0.0	0.0	No
7	285	Jeffrey Road/Trabuco Road	0.54	A	0.72	C	0.54	A	0.72	C	0.00	0.00	No
8	286	Jeffrey Road/Roosevelt	0.89	D	0.68	B	0.89	D	0.69	B	0.00	0.01	No

Δ = change

Delay is reported in seconds/vehicle.

HCM = Highway Capacity Manual

ICU = Intersection Capacity Utilization

ITAM = Irvine Transportation Analysis Model

Table I: Buildout Approved ADT Volumes and V/C Ratios

ITAM Link ID	Roadway	Segment	Capacity	Baseline			Plus Project			Δ V/C	Significant LOS Impact?
				ADT	V/C	LOS	ADT	V/C	LOS		
22134	Yale Avenue	Trabuco Road to Roosevelt	32,000	14,528	0.45	A	14,409	0.45	A	0.00	No
41981	Remington	Trabuco Road to Roosevelt	13,000	7,618	0.59	A	7,751	0.60	A	0.01	No
22138	Jeffrey Road	Trabuco Road to Roosevelt	54,000	43,468	0.80	C	43,640	0.81	D	0.01	No
22133	Trabuco Road	Yale Avenue to Remington	32,000	12,218	0.38	A	12,225	0.38	A	0.00	No
22137	Trabuco Road	Remington to Jeffrey Road	32,000	11,821	0.37	A	11,781	0.37	A	0.00	No
41980	Roosevelt	Yale Avenue to Remington	13,000	9,030	0.69	B	9,067	0.70	B	0.01	No
42418	Roosevelt	Remington to Truman Street	13,000	9,662	0.74	C	9,804	0.75	C	0.01	No
41605	Roosevelt	Truman Street to Jeffrey Road	26,000	14,388	0.55	A	14,499	0.56	A	0.01	No

Δ = change

ADT = average daily trips

ITAM = Irvine Transportation Analysis Model

V/C = volume-to-capacity ratio

for the proposed project were then added to the Existing traffic counts to represent Existing Plus Project conditions. The Existing, Project Trips Distribution, Project Trips Assignment, and Existing Plus Project peak-hour traffic volumes are illustrated on Figures 3, 4, 5, and 6, respectively.

This analysis has been conducted consistent with the approved Scope of Work and the TDPs. Applicable design criteria for the proposed project include TDP-1 (Turn Lane Pocket Lengths), TDP-3 (Left-Turn In/Out Access), TDP-4 (Right-Turn Lanes at Uncontrolled Driveways), TDP-10 (Distances between Driveways), and TDP-14 (Driveway Lengths).

TDP-1: Turn Lane Pocket Lengths

The length of left-turn pockets at signalized intersections is based on several parameters, including traffic control, turn volume, and cycle length. Storage lengths for unsignalized intersections should be designed based on 1 foot (ft) for each peak-hour left-turning vehicle. The purpose of the turn-pocket length is to allow the turning vehicle to exit the through movement and decelerate into the turn pocket without affecting the through movement. The minimum single-turn pocket length for Major, Primary, and Secondary Highways (i.e., Trabuco Road) is 150 ft. The minimum single-turn pocket length for Commuter and Local Streets (i.e., Roosevelt) is 90 ft. A zero percent truck mix has been assumed for this analysis. This assumption is based on the nature of the project being church/residential use, which typically does not generate truck traffic.

Remington/Trabuco Road (Westbound). The westbound (WB) left-turn lane at the unsignalized intersection of Remington/Trabuco Road is approximately 150 ft with an 80 ft transition in the Existing condition. However, as mentioned before, the City will install a new traffic signal at this location with a 152 ft WB left-turn lane, as shown in Figure 7, and this improvement is expected to be completed by 2025. Therefore, the intersection of Remington/Trabuco Road was analyzed as a signalized intersection. The Existing left-turn demand at this location is 49 vehicles during the a.m. peak hour and 41 vehicles during the p.m. peak hour. Based on TDP-1 criteria, the WB left-turn lane meets the 60 ft required to accommodate the existing 49 a.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 51 a.m. and 45 p.m. peak-hour vehicles (i.e., the addition of 2 a.m. and 4 p.m. peak-hour vehicles), which would require a 60 ft left-turn lane. The recommended minimum acceptable design length for a left-turn pocket length on Trabuco Road, a Primary Highway with a 50 mph speed limit, is 150 feet. Therefore, the designed 152 ft WB left-turn pocket meets TDP-1 criteria.

Remington/Roosevelt (Eastbound). The eastbound (EB) left-turn lane at the unsignalized intersection of Remington/Roosevelt is approximately 100 ft, with a 70 ft transition. The Existing left-turn demand at this location is 16 vehicles during the a.m. peak hour and 29 vehicles during the p.m. peak hour. Based on TDP-1 criteria, the EB left-turn lane meets the 29 ft required to accommodate the existing 29 p.m. peak-hour vehicles. The Existing Plus Project left-turn demand at this location is 19 a.m. and 37 p.m. peak-hour vehicles (i.e., the addition of 3 a.m. and 8 p.m. peak-hour vehicles), which would require a 37 ft left-turn lane. The recommended minimum acceptable design length for a left-turn pocket length on Roosevelt, a Local roadway with a 40 mph speed limit, is 90 feet. Therefore, the 100 ft EB left-turn pocket meets TDP-1 criteria.

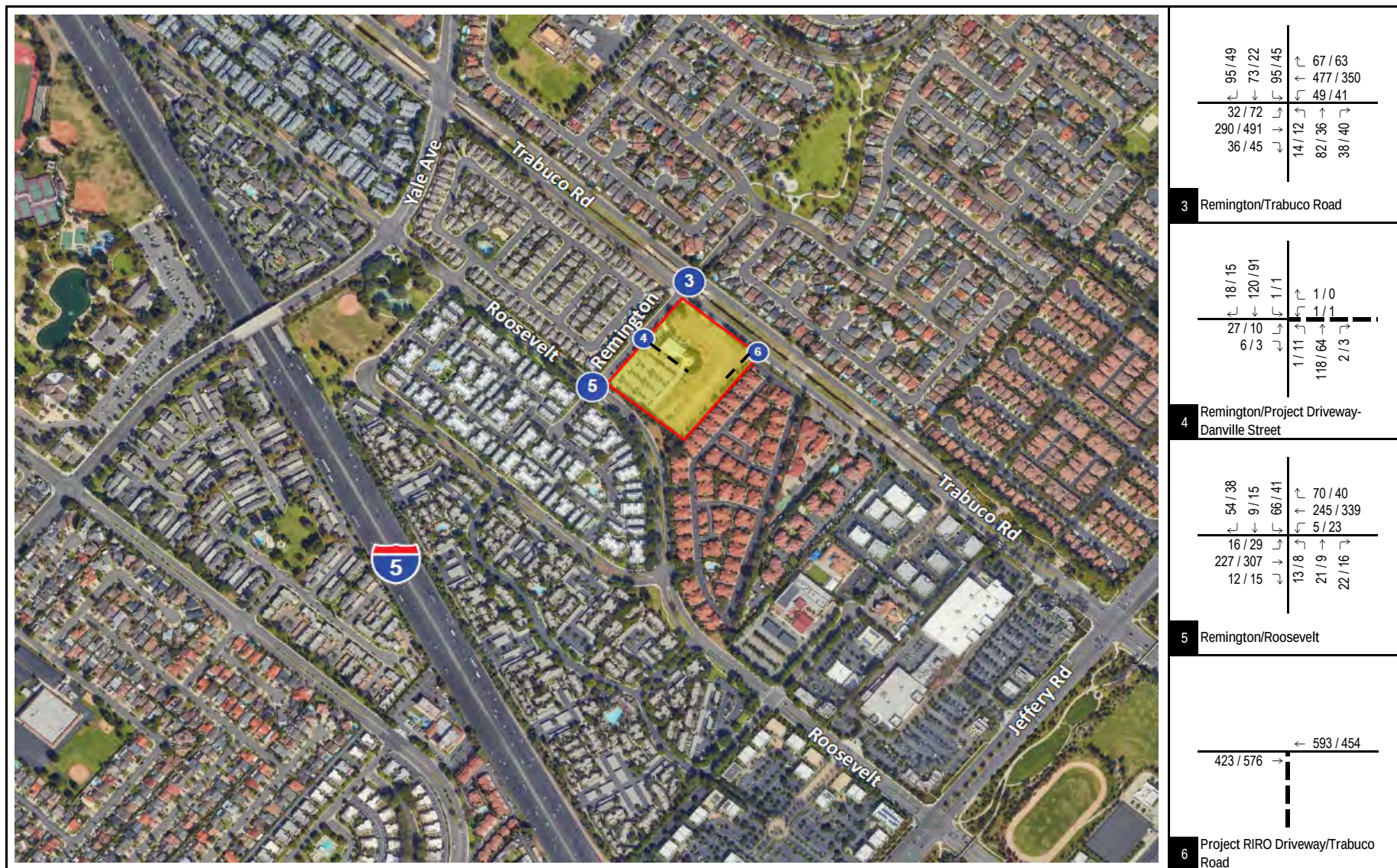


FIGURE 3

LSA

XXX / YYY AM / PM Peak-Hour Traffic Volumes
 RIRO Right-in/Right-out
 - - - Project Driveway
 Study Intersections

*Our Lady of Peace Church/Residential Project
 Access Analysis*

Existing Peak-Hour Volumes

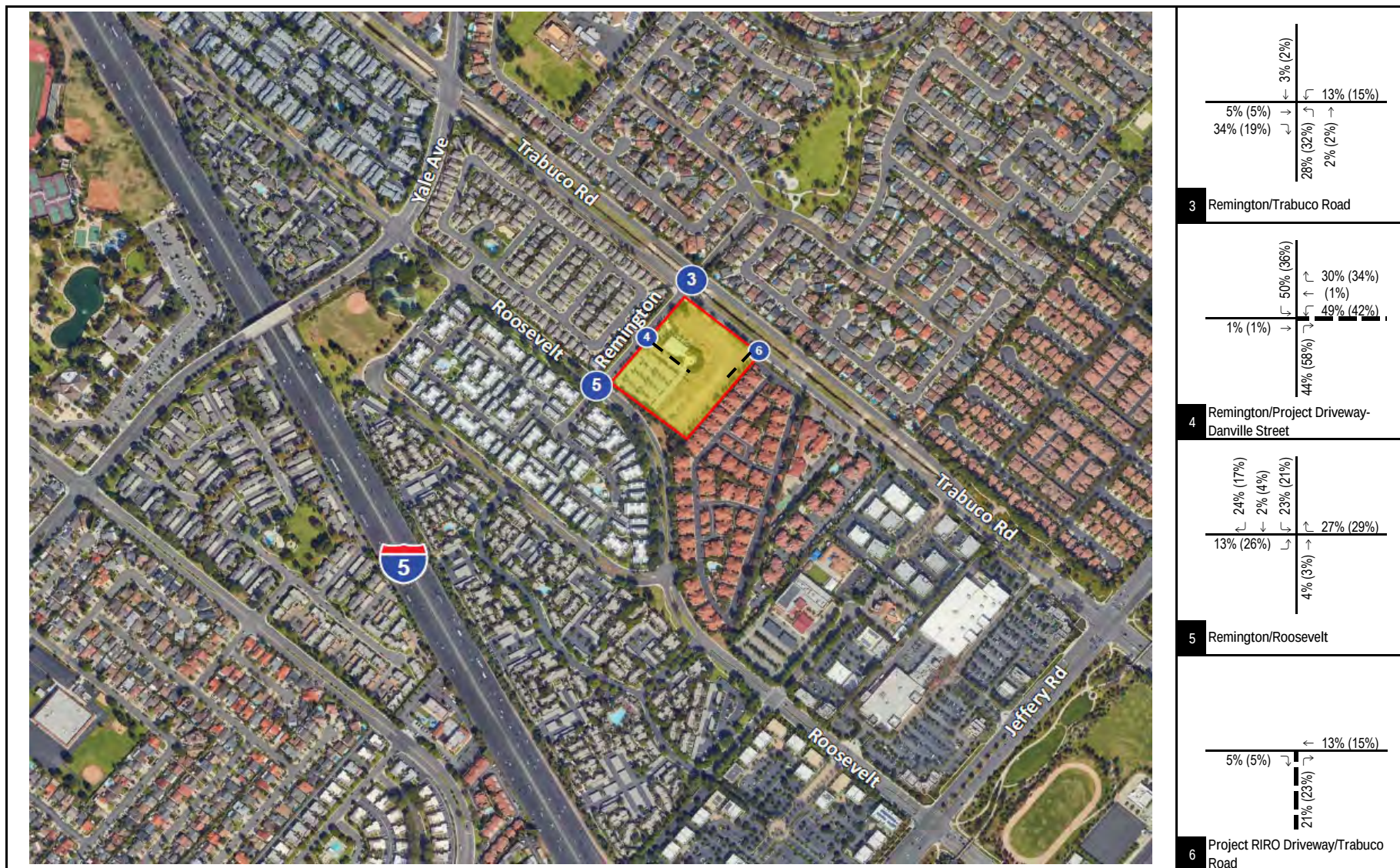


FIGURE 4

LSA

XX% (YY%) AM (PM) Trip Distribution
 RIRO Right-in/Right-out
 - - - Project Driveway
 3 Study Intersections

*Our Lady of Peace Church/Residential Project
 Access Analysis*

Project Trip Distribution

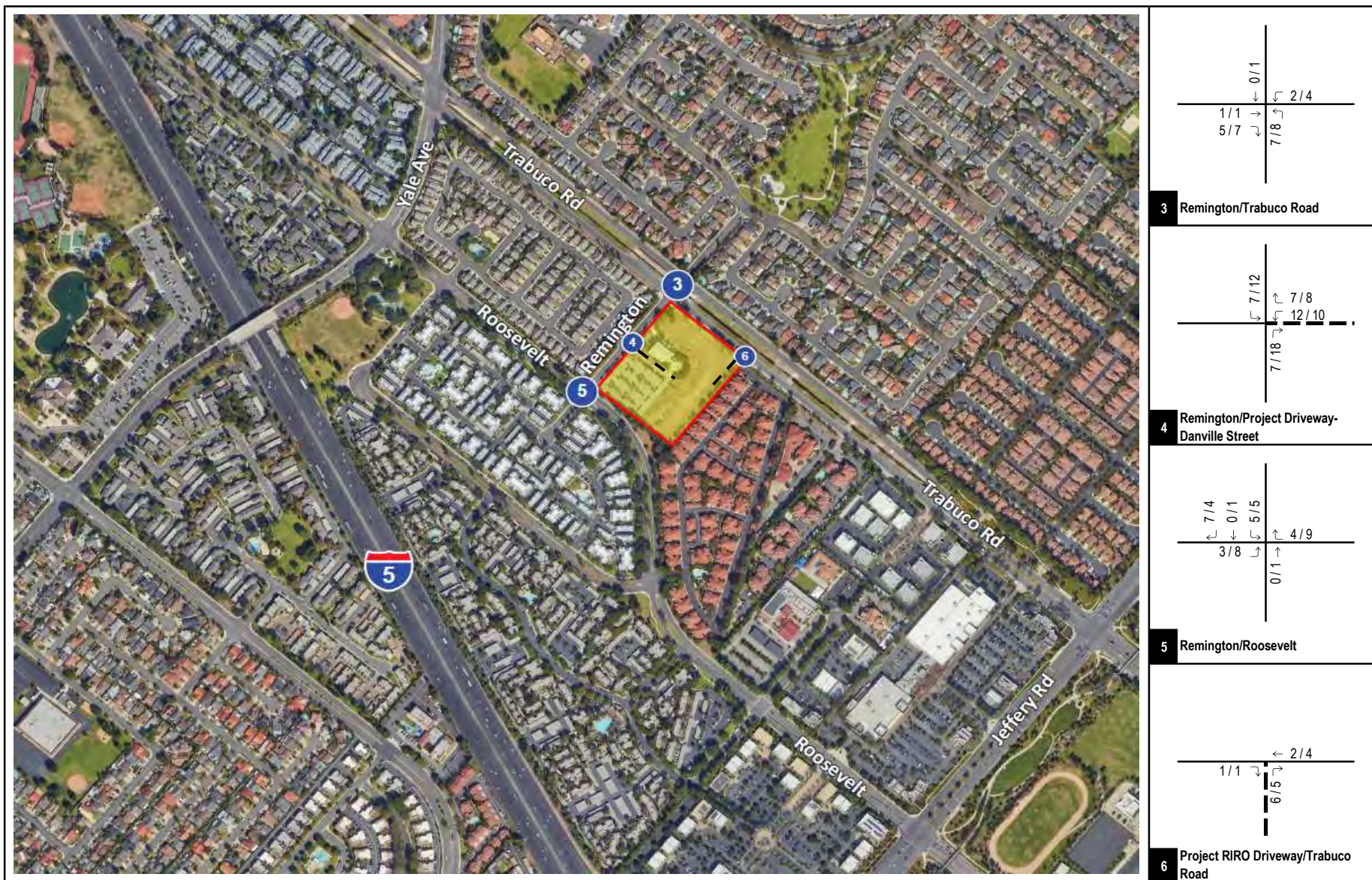


FIGURE 5

LSA

XX / YY AM / PM Peak-Hour Traffic Volumes
 RIRO Right-in/Right-out
 - - - Project Driveway
 3 Study Intersections

Our Lady of Peace Church/Residential Project
 Access Analysis
 Project Trip Assignment

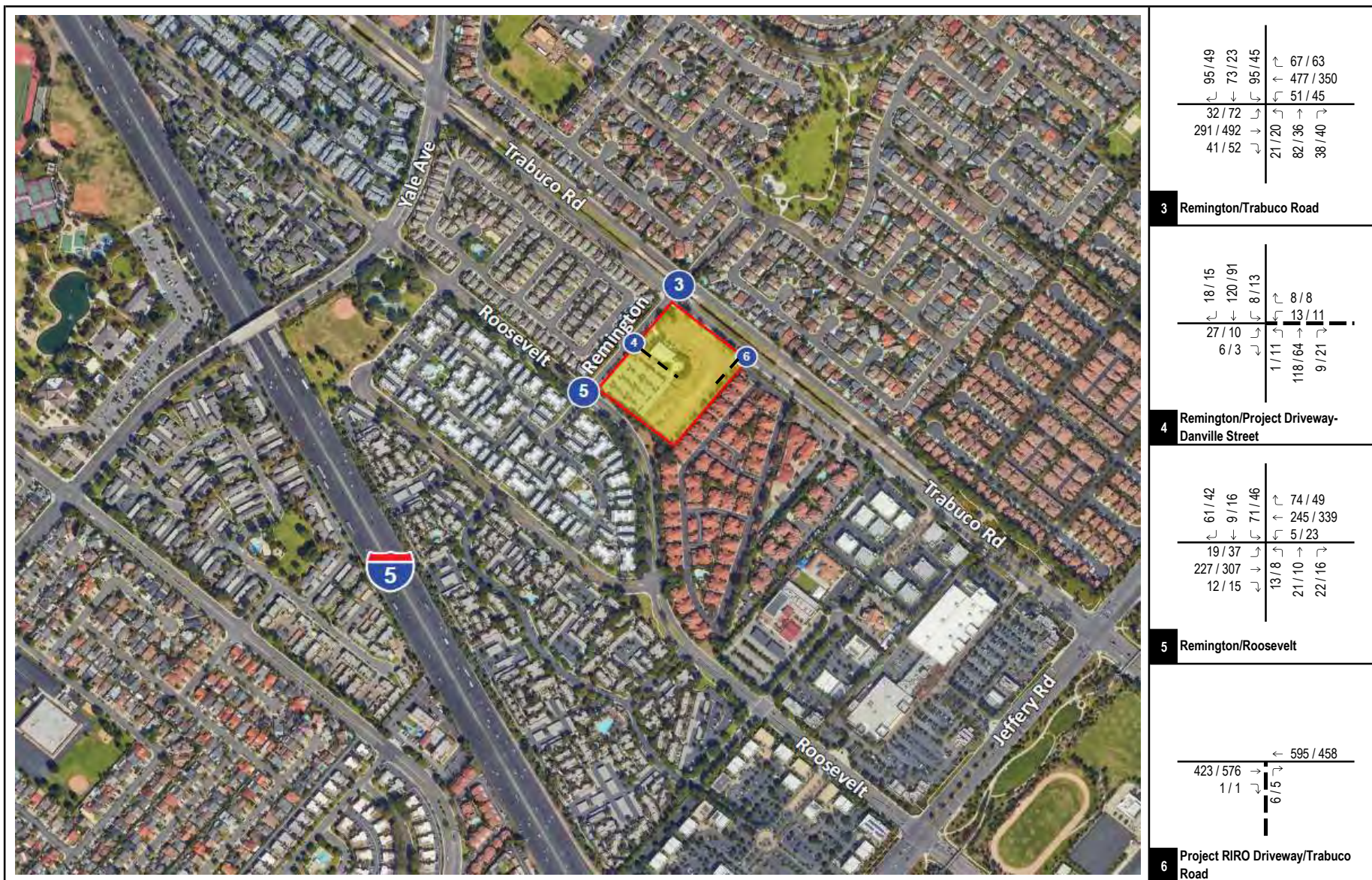


FIGURE 6

LSA

XX / YY AM / PM Peak-Hour Traffic Volumes

RIRO Right-in/Right-out

Project Driveway

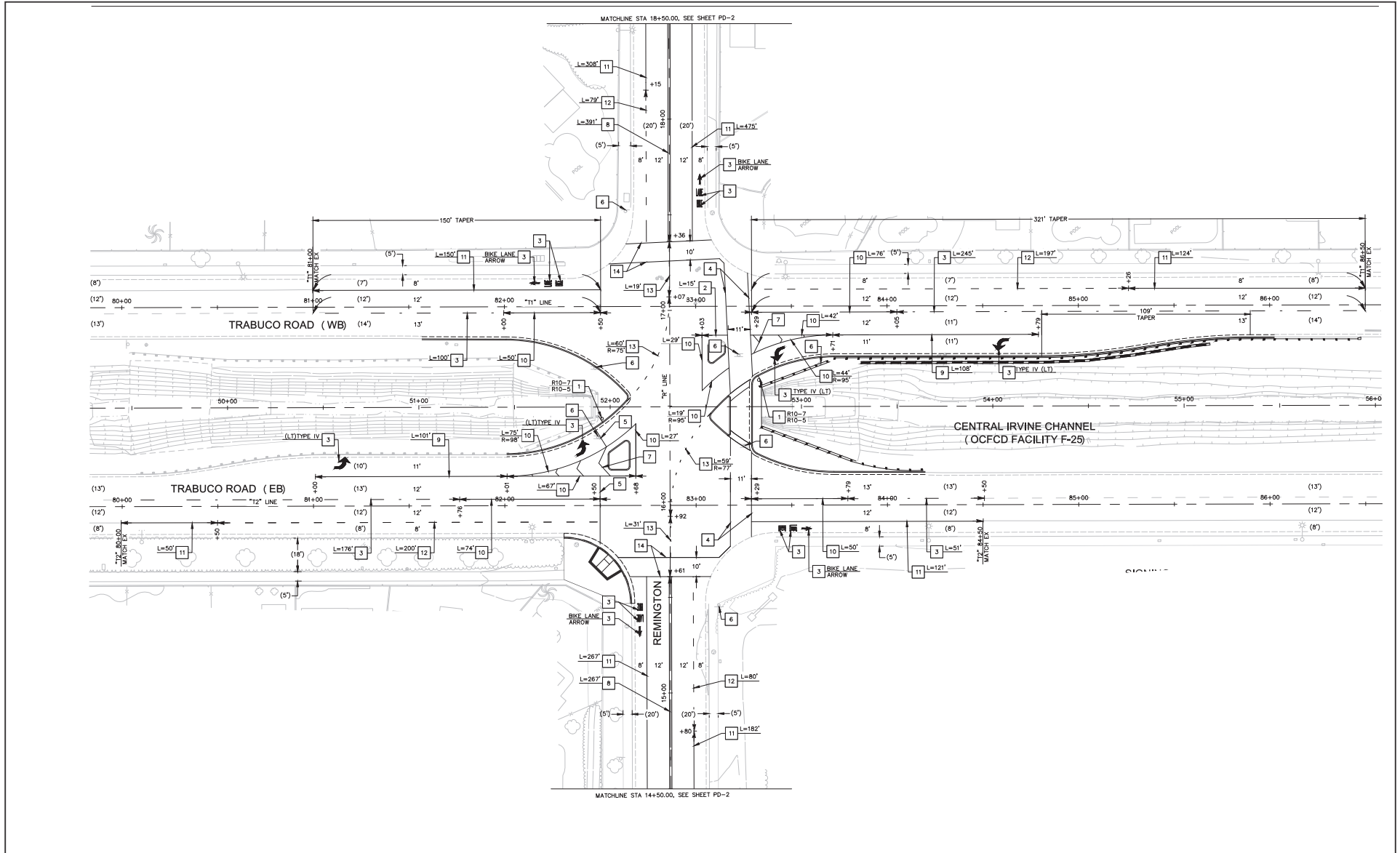


Study Intersections

Our Lady of Peace Church/Residential Project

Access Analysis

Existing Plus Project Peak-Hour Volumes



LSA



0 45 90
FEET

SOURCE: City of Irvine

I:\20241514\G\Signing_Striping.ai (10/18/2024)

FIGURE 7

Our Lady of Peace Church and Residential
Signing and Striping for the New Signal at Remington/Trabuco Road

TDP-3: Left-Turn In/Out Access

TDP-3 provides procedures to determine whether left-in only or left-in/left-out access will be considered along Major, Primary, Secondary, and Commuter Streets. This TDP is based on the volume of vehicles entering and/or exiting a driveway in relationship to the conflicting volumes along the highway.

Figure 3.1 (Left-Turn Access Design Procedures) in the City's TDP depicts the calculations for conflicting volumes. Figure 3.2 (Left-Turn Access Criteria) in the City's TDP presents a graph in which the left-turn volumes are compared to the conflicting volumes. Left-turn in/out access is considered acceptable when the point representing the left-turn volume and the conflicting volume lies below the line. Access is not recommended when this point is above the line.

Table J provides a summary of the TDP-3 analysis of the unsignalized project driveway on Remington.

Under Existing Plus Project conditions, the left-turn volumes into the project site via this unsignalized driveway are 8 a.m. and 13 p.m. peak-hour vehicles. The conflicting volumes for left-in access would be 127 a.m. and 85 p.m. peak-hour vehicles for the Existing Plus Project condition. Based on TDP-3, the volumes are below the point representing the left-turn volume and the conflicting volumes. Therefore, the TDP-3 criteria for left-turn-in access are satisfied for this project driveway.

Under Existing Plus Project conditions, the left-turn volumes out of the project site via this unsignalized driveway are 13 a.m. and 11 p.m. peak-hour vehicles. The conflicting volumes for left-out access would be 297 a.m. and 215 p.m. peak-hour vehicles for the Existing Plus Project condition. Based on TDP-3, the volumes are below the point representing the left-turn volume and the conflicting volumes. Therefore, the TDP-3 criteria for left-turn-out access are satisfied for this project driveway.

TDP-4: Right-Turn Lanes at Uncontrolled Driveways

TDP-4 states that right-turn lanes at unsignalized driveways along Primary Highways (i.e., Trabuco Road) are required for a peak hourly right-turn volume of 100 vehicles. A new unsignalized RIRO driveway on Trabuco Road was proposed by this project. As shown on Figure 6, the unsignalized RIRO driveway on Trabuco Road has right-turn volumes of 1 a.m. and 1 p.m. peak-hour vehicles under Existing Plus Project conditions. As such, a dedicated right-turn lane is not required at this unsignalized RIRO driveway.

TDP-4 also states that right-turn lanes are not required at unsignalized driveways along local streets (i.e., Remington). Therefore, the TDP-4 analysis is not required for the unsignalized full-access driveway on Remington.

Table J: TDP-3 Analysis Summary

Remington/Project Driveway-Danville Street

Turn Movement	Existing Plus Project Peak-Hour Volumes	
	AM	PM
Northbound Left (NBL)	1	11
Northbound Through (NBT)	118	64
Northbound Right (NBR)	9	21
Southbound Left (SBL)	8	13
Southbound Through (SBT)	120	91
Southbound Right (SBR)	18	15
Eastbound Left (EBL)	27	10
Eastbound Through (EBT)	0	0
Eastbound Right (EBR)	6	3
Westbound Left (WBL)	13	11
Westbound Through (WBT)	0	0
Westbound Right (WBR)	8	8
Left-In Access		
LTV-I (SBL)	8	13
V_c^1	127	85
Acceptable?	Yes	Yes
Left-Out Access		
LTV-O (WBL)	13	11
V_c^2	297	215
Acceptable?	Yes	Yes

Source: Compiled by LSA (2024).

V_c = conflicting volume

1V_c = NBT + NBR

2V_c = 1/2 NBR + NBT + NBL+ SBL + SBT +SBR + EBL +EBT

LTV-I = left-turn volume in

LTV-O = left-turn volume out

TDP-10: Distance Between Driveways and Intersections

TDP-10 states that the recommended minimum spacing between a driveway and an intersection, or two driveways is 230 ft for a Primary Highway (i.e., Trabuco Road) and 105 ft for local streets (i.e., Remington). Distances between driveways should be measured between the centerlines of each driveway. The distance between an intersection and a driveway should be measured from the curb face of the street to the curb face of the driveway. Figure 8 illustrates the driveway distances (and driveway lengths) in the vicinity of the project site.

RIRO Driveway/Trabuco Road. The new RIRO driveway on Trabuco Road is approximately 400 ft east of Remington and approximately 640 ft west of an adjacent driveway on the same side of the road. As such, TDP-10 is met for the RIRO driveway.

Remington/Project Driveway-Danville Street. The full-access driveway on Remington is approximately 250 ft north of Roosevelt and 275 ft south of Trabuco Road. As such, TDP-10 is met for the full-access driveway.

TDP-14: Driveway Lengths

TDP-14 provides guidance regarding a sufficient driveway length to allow vehicles “to enter the parking area without causing subsequent vehicles to back out on the City street system” (City of Irvine 2007). The measurement of sufficient length is based on the distance from the back of the sidewalk or stop bar to the first intersecting parking space or traffic control measure (i.e., gate/internal drive aisle) on site.

The minimum unsignalized driveway length should be 25 ft and should increase at a rate of 1 ft of storage per peak-hour vehicle (in 25 ft increments). Figure 8 illustrates the driveway lengths.

RIRO Driveway/Trabuco Road. A new unsignalized RIRO driveway on Trabuco Road was proposed by this project. Application of the minimum unsignalized driveway length criteria contained in TDP-14 to the Existing Plus Project peak-hour inbound traffic volumes shown on Figure 6 results in a recommended driveway length of 25 ft for the 1 a.m. or 1 p.m. peak hour inbound vehicles entering the RIRO driveway on Trabuco Road. As shown on Figure 8, the length of the RIRO driveway is approximately 46 ft measured from the back of the Trabuco Road sidewalk to the first internal drive aisle. As such, TDP-14 is met for this project RIRO driveway.

Remington/Project Driveway-Danville Street. Application of the minimum unsignalized driveway length criteria contained in TDP-14 to the Existing peak-hour inbound traffic volumes shown on Figure 3 results in a recommended driveway length of 25 ft for the 4 p.m. peak hour inbound vehicles entering the full-access driveway on Remington. Application of the minimum unsignalized driveway length criteria contained in TDP-14 to the Existing Plus Project peak-hour inbound traffic volumes shown on Figure 6 results in a recommended driveway length of 50 ft for the 34 p.m. peak hour inbound vehicles entering the full-access driveway on Remington. As seen on Figure 8, the length of the full-access driveway is approximately 195' measured from the back of the Remington sidewalk to the first internal drive aisle. As such, TDP-14 is met for this project full access driveway.



FIGURE 8

Circulation Phasing

The City's *Citywide Circulation Phasing Analysis Report* (LSA 2020) was reviewed to identify any deficient locations within the project study area. The City's analysis identified three locations for recommended improvements (Harvard Avenue/Michelson Drive, Bake Parkway/Jeronimo Road, and Jamboree Road/Portola Parkway). However, none of these locations are within the project study area.

Pedestrian Circulation

The *2045 Irvine General Plan Circulation Element* lists out 3 Objectives that aim to support pedestrian circulation. Objective C-3 is "to maintain and enhance the pedestrian circulation system to support and encourage walking as a mode of transportation" (City of Irvine 2024). Objective C-5 is to "enhance the city's infrastructure to support and encourage walking, cycling, and other forms of active transportation by developing safe, accessible and interconnected networks of pathways, bike lanes, and multi-use trails throughout Irvine" (City of Irvine 2024). Objective C-6 is to "plan, develop, and maintain a trail network to support facilities that support the needs of cyclists, equestrian riders, and hikers" (City of Irvine 2024).

In the vicinity of the proposed project, sidewalks are currently provided on Roosevelt, Remington and Trabuco Road. The project will include sidewalks throughout the site to serve both the residential and church uses. These sidewalks will also connect to the adjacent streets via Remington.

Bicycle Circulation

The *2045 Irvine General Plan* includes a list of goals and objectives for bicycle planning. As stated in the General Plan, the bicycle circulation objective C-4 is to: "Plan, provide, maintain, and enhance a comprehensive bicycle network that encourages increased use of bicycles." (City of Irvine 2024). Objective C-5 is to "enhance the city's infrastructure to support and encourage walking, cycling, and other forms of active transportation by developing safe, accessible and interconnected networks of pathways, bike lanes, and multi-use trails throughout Irvine" (City of Irvine 2024). Objective C-6 is to "plan, develop, and maintain a trail network to support facilities that support the needs of cyclists, equestrian riders, and hikers" (City of Irvine 2024).

On-street (Class II) bicycle lanes in the study area are currently provided on Yale Avenue, Jeffrey Road, Trabuco Road and Roosevelt.

At the time this traffic study was prepared, an amendment to the bicycle parking requirements, as stated in the City's Zoning Ordinance, has not been finalized and approved by the Planning Commission and City Council. The project applicant is aware and is committed to providing bicycle parking amenities that meet the upcoming zoning ordinance update.

Transit Facilities

Transit facilities are accessible both to and from the project site via sidewalks along Trabuco Road, Roosevelt, and Remington. This is an important feature because OCTA and Irvine CONNECT stops are provided at the northeast and southwest corners of Yale Avenue/Trabuco Road (approximately 2,200 walkable feet from the project) for Irvine CONNECT, the northeast and southwest corners of

Yale Avenue/Roosevelt (approximately 1,900 walkable feet from the project) for Irvine CONNECT, and the northeast and southwest corners of Jeffrey Road/Trabuco Road (approximately 2,700 walkable feet from the project) for OCTA Route 167.

Irvine CONNECT is a free shuttle service, provided by the City, to connect the northern end of Irvine to Irvine Train Station via Yale Avenue, with stops at parks, schools, hospitals, and shopping centers. OCTA Route 167 provides transportation to and from Orange and Irvine via Jeffrey Road. The Irvine CONNECT and OCTA bus system maps and bus stop locations are provided in Appendix F.

Vehicle Miles Traveled Analysis

Background

On December 28, 2018, the California Office of Administrative Law cleared the revised *State CEQA Guidelines* for use. Among the changes to the guidelines was removal of vehicle delay (in seconds per vehicle) and LOS from consideration under CEQA. As a result of the final rulemaking surrounding Senate Bill 743 and the implementation deadline of July 1, 2020, a VMT analysis has been prepared in accordance with the City's adopted *Traffic Study Guidelines* (City of Irvine 2023).

Screening Criteria

Per the City's *Traffic Study Guidelines*, there are five types of VMT screening criteria that may be used to determine whether projects can be screened from a project-level assessment. These are summarized below:

1. The project requires an Addendum to a certified Environmental Impact Report (EIR) and can demonstrate that it is not subject to VMT analysis per *State CEQA Guidelines* Sections 15064.3 and 15007(c), and applicable guidance from the Governor's Office of Planning and Research.
2. The project results in a net increase of 250 or less weekday daily trips based on the latest edition of the ITE trip rates (or other trip generation rate approved by the City).
3. The project is located in a Transit Priority Area (i.e., located within 0.5 mile of an existing rail transit station or within 0.5 mile of two or more existing bus routes with a frequency of service interval of 15 minutes or less during morning and evening peak hours).
4. The project is 100 percent restricted affordable housing units.
5. The project is locally serving such as 100,000 square feet or less of retail use, daycare use, or a locally serving public school (kindergarten through 12th grade).

The proposed and previously approved Church qualifies as a locally serving public facility under the City's VMT screening criteria. Locally serving development projects are presumed to have less-than-significant impacts to the transportation system. Religious assembly uses primarily serve nearby residents, generate short local trips, and do not contribute to regional VMT. As such, the church is presumed to have a less-than-significant transportation impact and is screened from further VMT analysis. However, the proposed 68 multi-family residential dwelling units cannot be screened out based on any of the adopted screening criteria.

Analysis

The VMT analysis was prepared based on the City's *Traffic Study Guidelines* and ITAM model. As discussed with the City Transportation staff, it is not necessary to include the proposed church use in the VMT analysis since it can be screened out. In addition, the project site has an approved Entitlement for 57,650 sf of church use to accommodate the proposed church use of 45,521 sf. Since the proposed 68 multi-family residential dwelling units do not screen out based on any of the above criteria, a VMT analysis is required.

In order to determine the proposed residential use's VMT, the proposed multi-family residential dwelling units need to be isolated in the project TAZ 97 (ITAM TC) and other land uses from TAZ 97 (ITAM TC) were moved to the adjacent TAZ 101 (ITAM TC). A project-level VMT analysis was prepared using the City's VMT calculation tool. Per the City's *Traffic Study Guidelines*, affordable units are screened out of the Project VMT Rate. The proposed project's VMT is calculated based on the non-affordable units, while the population is calculated based on the total number of units (non-affordable + affordable). As seen in the ITAM Project VMT Summary Report (Appendix G), the non-affordable units' population is shown under "Population", whereas the affordable units' population is shown under "Other VMT Contributor". The project's VMT Rate is calculated by taking the Residential VMT and dividing it by the total population (Population + Other VMT Contributor) to determine if the project has a significant VMT impact.

The analysis results are provided in Appendix G. Table K below presents a summary of the VMT analysis results. As shown in Table K, the proposed residential use is required to reduce its VMT Rate by 31.3 percent and is presumed to have a significant CEQA transportation impact.

Table K: Project VMT Analysis Result

VMT Analysis Scenario	VMT Rate	
	VMT	Metric
Residential VMT Rate Threshold Goal ¹	14.88	VMT per capita
Project VMT Rate ²	21.67	VMT per capita
Above or Below Citywide VMT Threshold	Above	
Significant Impact?	Yes	
VMT Reduction Required	31.3%	

Source: Compiled by LSA (2025).

¹ Per the City of Irvine *Traffic Study Guidelines* (March 21, 2023).

² Project VMT analysis is provided in Appendix G.

VMT = vehicle miles traveled

VMT Mitigation Measures

Since a significant VMT impact (31.3 percent) has been identified for the proposed residential use, potential mitigation measures to reduce the proposed residential use's VMT impact to a level at or below the City's threshold must be identified. According to the City's *Traffic Study Guidelines*, all feasible mitigation measures must be incorporated into the project to substantially reduce the impact even if the project cannot meet the adopted VMT threshold.

The California Air Pollution Control Officers Association (CAPCOA) *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity* (October 2024) (CAPCOA Handbook) is utilized for identifying the various mitigation strategies and methods to quantify VMT reductions. The CAPCOA VMT reduction strategies include built environment changes and transportation demand management (TDM) actions. The TDM strategies are separated into seven subsectors: Land Use, Trip Reduction Programs, Parking or Road Pricing/Management, Neighborhood Design, Transit, Clean Vehicles and Fuels, and School Programs.

One mitigation measure (T-18, as listed below) was identified as an applicable measure for the proposed project (residential component). Other potential VMT mitigation measures were also reviewed but ruled out because of the nature of the proposed use and the lack of ongoing control that the property developer has with respect to implementation.

- **Neighborhood Design:**

- **T-18 (Provide Pedestrian Network Improvement):** Up to a 6.4 percent maximum VMT reduction. Providing sidewalks and an enhanced pedestrian network encourages people to walk instead of drive, and this mode shift results in a reduction in VMT.

Mitigation measure T-18 allows for a max VMT reduction of 6.4 percent, however due to overlap between this strategy and a reduction strategy identified in the City's *Traffic Study Guidelines*, the City's measure was considered. As such, the City allows for a 2.5 percent VMT reduction related to pedestrian and bicycle network connectivity. The on-site improvements provided by the proposed project would enhance bicycle and pedestrian connectivity by providing sidewalk links to Remington and access to nearby transit stops.

Assuming the mitigation measure could achieve its maximum VMT reduction value, the implementation of this measure could reduce the project's VMT Rate by 2.5 percent, which is less than the project's VMT impact of 31.3 percent. Therefore, the proposed project will have a significant unavoidable VMT impact.

The VMT mitigation measure mentioned in the CAPCOA Handbook, as well as the City's *Traffic Study Guidelines*, would not reduce the total VMT increase caused by the proposed residential use below the City's Residential VMT Rate Threshold Goal. Therefore, the proposed residential component of this project would result in a significant transportation (CEQA) impact, and a Statement of Overriding Considerations must be considered for adoption and is a part of the CEQA document prepared for this project.

REQUIRED IMPROVEMENTS AND/OR RECOMMENDATIONS

Based on the results of this analysis, the development of the proposed project can be implemented without significantly impacting the LOS of the surrounding roadway system in the Existing, Short-Term, Long-Range, and Buildout horizons. As such, no physical improvements are required.

CONCLUSIONS

The proposed project can be implemented without adversely affecting the surrounding roadway system. The evaluation of the study area intersection and roadway segment LOS shows that the addition of project traffic to the Existing, Short-Term, Long-Range, and Buildout conditions would not create any significant adverse impacts.

Project design features were also analyzed based on the City Transportation Design Procedures (TDPs). As a result, no impacts to vehicle access were identified using the following design guidelines:

- **TDP-1:** Turn-lane Pocket Lengths
- **TDP-3:** Left-Turn In/Out Access
- **TDP-4:** Right-Turn Lanes at Uncontrolled Driveways
- **TDP-10:** Distances between Driveways and Intersections
- **TDP-14:** Driveway Lengths

The proposed project would maintain the existing walkways/sidewalks and on-street (Class II) bicycle lanes near the project site and include new on-site sidewalks connecting the residential and church uses to Remington. Irvine CONNECT bus stops are provided at Yale Avenue/Trabuco Road and Yale Avenue/Roosevelt; OCTA bus stops are provided at Jeffrey Road/Trabuco Road for OCTA Route 167.

Based on the City's *Traffic Study Guidelines*, the proposed and previously approved Church use qualifies as a local-serving use; therefore it is screened out from further VMT analysis. As such, the church component is presumed to have a less than significant CEQA transportation impact.

The proposed 68 multi-family residential dwelling units do not meet any of the City's adopted VMT screening criteria. As such, a detailed VMT analysis was conducted using the City's ITAM traffic model. The nine affordable units were screened out of the Project VMT Rate per the City's methodology. Based on the City's *Traffic Study Guidelines* and the project's VMT Analysis, the residential component is required to reduce its VMT Rate by 31.3 percent and is therefore presumed to have a significant CEQA transportation impact. One applicable VMT mitigation measure identified from the CAPCOA Handbook is the T-18 (Provide Pedestrian Network Improvement), similar to the City's Bicycle and Pedestrian Network Connectivity mitigation measure identified in the City's *Traffic Study Guidelines*. Due to overlap among these strategies, the City's measure was considered for this project. Assuming maximum effectiveness, the implementation of this measure could reduce the VMT Rate by up to 2.5 percent, which is less than the project's required reduction of 31.3 percent. As a result, the proposed project will have a significant unavoidable VMT impact. Therefore, a Statement of Overriding Considerations must be considered for adoption as part of the CEQA document prepared for the project.

REFERENCES

California Air Pollution Control Officers Association (CAPCOA). 2024. *Handbook for Analyzing Greenhouse Gas Emission Reductions, Assessing Climate Vulnerabilities, and Advancing Health and Equity*. October.

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LSA Associates, Inc. (LSA). 2020. *2020 Citywide Circulation Phasing Analysis Report* (LSA Project No. CIV1901). March.

Transportation Research Board (TRB). 2022. *Highway Capacity Manual*, 7th Edition.

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APPENDIX A

APPROVED SCOPE OF WORK

OUR LADY OF PEACE CHURCH/RESIDENTIAL TRAFFIC STUDY SCOPE OF WORK

CASE FILE NO. 00922106-PPA

The purpose of this Scope of Work is to define the methodology and requirements for a Traffic Study for the proposed 36,647 square feet (sf) Church and 68 residential dwelling units planned at 14010 Remington in Planning Area 8 of the City of Irvine. The Traffic Study will determine the potential short-term, long-range and buildout traffic level of service (LOS) impacts resulting from replacing the existing church building (7,128 sf) with the proposed 36,647 sf church and 68 residential dwelling units. The design of the proposed project (including the access, circulation, and layout of the site plan) is subject to the findings of the Traffic Study. The study will also include an assessment of Vehicle Miles Traveled (VMT), which is the metric used to determine potential California Environmental Quality Act (CEQA) impacts for transportation.

The project site is an approximately 6-acre property. A church building (7,128 sf) currently exists on the project site along with a parking lot and courtyard, which cover approximately 40 percent of the project site. The remaining portion of the project site is undeveloped with vacant land and trees abutting the pedestrian sidewalks. Entitlement has been previously approved by the City to accommodate a 57,650 sf church on the project site. The proposed project includes construction a new church (15,942 sf with 498 seats), sanctuary (17,280 sf) and rectory (3,425 sf) on the 3.06-acre northern portion of the site, and construction of 68 multi-family dwelling units on the 2.94-acre southern portion of the site. The project will be constructed by the year 2027. The site is currently accessed via a full driveway on Remington, opposite of Danville Street. This driveway will remain. In addition, a new right turn in/out only (RIRO) driveway is proposed on the east side of the property to Trabuco Road.

As shown in Table A (attached), per the Institute of Transportation Engineers (ITE) trip generation rates (11th Edition), the proposed project (i.e., 29,519 sf net new church use and 68 multi-family dwelling units) could generate 36 a.m. peak-hour, 50 p.m. peak-hour, and 683 daily trips. As the peak-hour trip increase is more than 49 trips, a comprehensive Traffic Study is required that will focus on short-term interim-year, long range and buildout conditions at intersections and roadway segments surrounding the project site.

This Scope of Work outlines the tasks necessary for preparation of a Traffic Study. The Traffic Study will be developed in accordance with the applicable sections of the City's Traffic Study Guidelines (March 2023) and the City's Transportation Design Procedures (TDPs) (February 2007) and will include the following key elements.

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I. EXECUTIVE SUMMARY

This section of the Traffic Study will provide a short, clear, and concise description of the project and analysis findings. The project recommendations and mitigation measures will also be included in this section, if necessary.

II. INTRODUCTION

This section will include a comprehensive description of the project and key elements of the Traffic Study, including planning area description, general terrain features, and approved and proposed uses on site. The specific surrounding land uses on each adjacent parcel will also be described. The following elements are identified for the purpose of conducting the Traffic Study.

A. Project Site

A project location and study area intersection map (Figure 1, attached) is attached to this Scope of Work and will be provided in the Traffic Study. The project site is located on the southeast corner of Remington and Trabuco Road. Access to the site will continue to be provided via a full driveway on Remington and a new right turn in/out only driveway on Trabuco Road. The proposed residential site plan and the preliminary buildout of the church portion of the site is illustrated in Figure 2 (attached).

B. Study Area Boundary

The study area will include the following intersections (and roadway links between each intersection) in the City's traffic model (Irvine Transportation Analysis Model [ITAM TC]):

1. Yale Avenue/Trabuco Road
2. Yale Avenue/Roosevelt
3. Remington/Trabuco Road
4. Remington/Project Driveway-Danville Street
5. Remington/Roosevelt
6. Project RIRO Driveway/Trabuco Road
7. Jeffrey Road/Trabuco Road
8. Jeffrey Road/Roosevelt

Roadway segments in between the study area intersections will be analyzed. If significant project traffic distribution is identified at the boundary of the initial study area, the analysis area will be expanded accordingly.

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C. Existing, General Plan, and Proposed Site Uses

Existing site uses, zoning and proposed land uses shall be described.

III. PERFORMANCE CRITERIA

The performance criteria to determine potential project effects and improvements will be consistent with the City's criteria, as approved by the City (March 2023). Also, the most recently approved peak-hour link capacity methodology will be utilized for evaluating roadway capacity conditions and the need for improvements (if necessary). The City's TDPs will be used as the performance criteria to evaluate the design features of the proposed project accesses and internal circulation.

IV. EXISTING CONDITIONS

A. Existing Site Uses

Existing and approved land uses on site will be identified.

B. Existing Roadways and Intersections

The characteristics of the site's surrounding roadway network will be surveyed to verify the existing number of lanes, traffic signal locations, intersection configurations, and other visible factors that may have to be included in the analysis. It should be noted that the intersection of Remington/Trabuco Road is a City CIP project to signalize the intersection. Construction of this CIP project is anticipated to begin in 2024 with completion prior to buildout of the proposed project.

Existing roadway volumes, volume-to-capacity (v/c) ratios, and level of service (LOS) at intersections will be included for the above roadways and intersections. The Intersection Capacity Utilization (ICU) and Highway Capacity Manual (HCM) methodologies will be used for signalized and unsignalized intersections, respectively. The LOS analysis tables will include ITAM TransCAD (ITAM TC) intersection and link numbers for each study area intersection and roadway segment.

V. ANALYSIS METHODOLOGY/APPROACH

LSA will collect new peak-hour and ADT counts at study area intersections and roadway segments when Irvine schools are in session.

Study area intersections will be analyzed using the adopted ICU methodology for signalized intersections and the HCM methodology for unsignalized intersections. The roadway segments between the intersections will also be analyzed in the report. Daily traffic volumes and v/c ratios will be presented in the analysis for these roadway segments. A peak-hour link analysis will be conducted for roadway segments where the "plus project" LOS is LOS E and the project contributes greater than 0.02 to the v/c ratio.

The approved TransCAD version of the ITAM will be used for conducting all runs. The following ITAM TC future runs will be conducted by LSA.

- Short-Term Interim-Year Approved Baseline

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- Short-Term Interim-Year Approved Baseline Plus Project
- Long Range Approved Baseline
- Long Range Approved Baseline Plus Project
- Buildout Approved Baseline
- Buildout Approved Baseline Plus Project

The future conditions described above are based on the roadway network and land use assumptions envisioned to be in place. City staff has incorporated all approved projects to be analyzed for the cumulative setting in the ITAM TC.

City staff will make all necessary land use and network changes for the baseline (approved) scenarios and will provide LSA with the baseline ITAM TC files. LSA will prepare the forecast “plus project” ITAM TC data. A description of any changes to the ITAM TC for this project will be provided to the City for review. The ITAM TC data will be post-processed and used in the LOS analysis.

VI. FUTURE TRAFFIC CONDITIONS

LSA will analyze the project effects on the study area intersections and roadway segments for the Short-term Interim-year, Long Range and Buildout conditions. For purposes of the traffic modeling and level of service analysis, Traffic Analysis Zone (TAZ) 97 (ITAM TC)/TAZ 96 (ITAM 15) will add 68 multi-family residential dwelling units. In addition, LSA will confirm with City staff on the amount of church use to add to the TAZ (if any) to represent the proposed project and previous approvals (i.e., 57,650 sf).

LSA will request the future baseline ITAM TC from City staff. LSA will revise the land use and incorporate network changes related to the “plus project” scenario. These ITAM runs will include the following scenarios:

1. **Short-Term Interim-Year Approved Baseline:** The ITAM TC run will include each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM TC will be deleted for the analysis of this scenario.
2. **Short-Term Interim-Year Baseline Plus Project:** The ITAM TC run will include each application for development approved by the City. The project of 36,647 sf church use and 68 multi-family dwelling units will be included in TAZ 97 (ITAM TC)/TAZ 96 (ITAM 15) and will be assumed to be built for this analysis.
3. **Long Range Approved Baseline:** The ITAM TC run will include each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM TC will be deleted for the analysis of this scenario.
4. **Long Range Baseline Plus Project:** The ITAM TC run will include each application for development approved by the City. The project of 36,647 sf church use and 68 multi-family dwelling units will be included in TAZ 97 (ITAM TC)/TAZ 96 (ITAM 15) and will be assumed to be built for this analysis.

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5. **Buildout Approved Baseline:** The ITAM TC run will include each application for development approved by the City. Any additional development beyond the existing uses for the project that might be assumed in ITAM TC will be deleted for the analysis of this scenario.
6. **Buildout Baseline Plus Project:** The ITAM TC run will include each application for development approved by the City. The project of 36,647 sf church use and 68 multi-family dwelling units will be included in TAZ 97 (ITAM TC)/TAZ 96 (ITAM 15) and will be assumed to be built for this analysis.

LSA will utilize the ITAM TC to analyze these conditions at study area intersections and roadway segments. In addition, City staff will review the ITAM TC network and land uses for the baseline and “plus project” scenario to ensure that it accurately reflects the project impacts prior to the model runs. LSA will provide an electronic copy of the “plus project” ITAM TC runs with the Traffic Study to the City/Project Manager for review.

Project impacts will be identified at study area intersections for the Short-term Interim-Year, Long Range and Buildout conditions, assuming improvements to the circulation system identified by the City. Daily traffic volumes and v/c ratios will also be presented in the analysis for the study area roadway segments for each scenario. The City’s peak-hour link analysis (per the adopted City Traffic Study Guidelines) will be utilized for evaluating roadway capacity conditions and the need for improvements (if necessary). The peak-hour link analysis will determine directional a.m. and p.m. peak-hour v/c ratios for each link which is projected to exceed LOS standards. The peak-hour capacity will be determined by multiplying the midblock number of lanes for each direction by a lane capacity of 1,600 vehicles per hour. Where the distance between controlled intersections is one or more miles, the midblock number of lanes shall be multiplied by a lane capacity of 2,000 vehicles per hour.

VII. PROPOSED PROJECT IMPACTS

A. Trip Generation

LSA will generate a.m. peak-hour, p.m. peak-hour, and daily trips for the project land uses using trip rates from the latest ITE Trip Generation manual (11th Edition). This information will be provided in tabular form (Table A, attached).

B. Adjustments to Trip Generation

No adjustments to the trip generation shall be made without prior written approval from the City.

C. Trip Distribution and Trip Assignment

The directions of approach to and departure from the site will be obtained based on an ITAM TC select zone analysis conducted for Buildout Approved Baseline Plus Project a.m. peak-hour, p.m. peak-hour, and daily conditions. Any revisions to the project TAZ centroid connectors or refinements to the project trip distribution based on the locations and layout of the project driveways shall be completed in coordination with City staff. A map indicating regional directions of trip distribution will be presented in the Traffic Study.

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VIII. PHASING

The proposed project will be completed by the year 2027.

IX. SPECIAL ANALYSES/ISSUES

A. Access Analysis

An access analysis of the existing project driveway on Remington and proposed RIRO driveway on Trabuco Road will be performed. Existing peak-hour counts will be conducted at the project driveway by an independent car count company. LSA will review project volume forecasts and determine the adequacy of the interface with the arterial street system using the City's TDPs.

For purposes of the access analysis, the project will include buildout of the church (36,647 sf) and the proposed 68 dwelling units. The project net peak-hour trips, per ITE trip rates, will be assigned in and out of the project access driveway. Trip distribution and driveway allocation will be determined using the distribution patterns from the most recent version of the ITAM model. An exhibit will be provided that shows the existing without project and existing plus project turning volumes at the access driveway to the project site. The exhibit will depict the driveways, as well as any adjacent and/or opposing driveways. The exhibits will be drawn roughly to scale, with the distances between driveways and intersections dimensioned. The adjacent and opposing driveways to the project site will be included as part of the access analysis.

The internal circulation analysis will address specific design requirements of the City based on the proposed access plan and the project trip assignment. This analysis is to ensure that the project will continue to meet or exceed the requirements within the City's TDPs. Specific design features to be evaluated include:

- **Turn-lane Pocket Lengths (TDP-1)** – WBL at Remington/Trabuco Road and EBL at Remington/Roosevelt.
- **Left Turn-in/out Access (TDP-3)** – the project driveway on Remington.
- **Right Turn Lanes at Uncontrolled Driveways (TDP-4)** – project driveways.
- **Distances between Driveways (TDP-10)** – project driveways.
- **Driveway Lengths (TDP-14)** – project driveways.

A summary of the proposed project and results of the analysis will be prepared. Based upon these results, recommendations will be presented for the design of the project access driveways and interface with adjacent streets. These recommendations will be consistent with the City's TDPs.

B. Circulation Phasing

An analysis of any deficient intersections identified in the City's 2020 Circulation Phasing Analysis Report within the project study area (if any) will be included in this section.

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C. Pedestrian Circulation

The pedestrian circulation on site and connection to the adjacent public facilities and corresponding traffic control measures within the project site will be discussed in this section. The Traffic Study will include a discussion of how policies a, b, and c of General Plan Objective B-3 will be met with implementation of this project.

D. Bicycle Circulation

Bicycle circulation on site and connection to adjacent bicycle facilities will be discussed in this section. LSA will document how the project will conform to applicable policies of Objective B-4 of the City's General Plan.

E. Transit Facilities

The Traffic Study will identify the transit facilities (e.g., OCTA bus, iShuttle, Irvine Connect) within the project vicinity. If a bus stop is located adjacent to the project site, LSA will discuss pedestrian access and bus stop turnout design per City guidelines.

F. Vehicle Miles Traveled (VMT) Analysis

LSA will conduct the appropriate level of VMT analysis, if required, based on the City's adopted Traffic Study Guidelines. The need for a VMT analysis is subject to the determination of the appropriate level of CEQA analysis required for the project.

If needed, a VMT analysis will be prepared to calculate the project's VMT based on the approved version of the ITAM TC. The project VMT will be compared to the regional VMT to determine potential CEQA impacts. The results of this analysis will identify if the proposed project has a less-than-significant impact or if mitigation is required to reduce the VMT.

X. REQUIRED MITIGATION MEASURES AND/OR RECOMMENDATIONS

Based on the results and in accordance with the adopted City Traffic Study Guidelines, physical, operational, and/or alternative improvements required to offset any potentially adverse effects due to the proposed project will be identified.

XI. CONCLUSIONS

A summary of the results of the analysis and recommendations will be prepared.

XII. REVISIONS TO ANALYSIS

Revisions to the Traffic Study will be provided in response to the City's comments.

XIII. SIGNATURE

The Traffic Study will be prepared under the supervision of, and signed, stamped, and dated by, a registered traffic engineer or a registered professional civil engineer with appropriate engineering and/or planning credentials.

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Attachments: Table A – Trip Generation Summary
Figure 1: Project Location and Study Area Intersections
Figure 2: Site Plan

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Table A: Project Trip Generation

Land Use	Size	Unit	ADT	AM Peak Hour			PM Peak Hour		
				In	Out	Total	In	Out	Total
Trip Rates ¹									
Church		tsf	7.60	0.20	0.12	0.32	0.22	0.27	0.49
Multifamily Low-Rise		du	6.74	0.10	0.30	0.40	0.32	0.19	0.51
Project Trip Generation									
Multifamily Low-Rise	68	du	458	7	20	27	22	13	35
Church	36.647	tsf	279	7	4	11	8	10	18
Total			737	14	24	38	30	23	53
Existing Trip Generation									
Church	7.128	tsf	54	1	1	2	1	2	3
Project-Existing Trip Generation			683	13	23	36	29	21	50

¹ Trip rates from the Institute of Transportation Engineers (ITE) *Trip Generation* Manual, 11th Edition (2021).

Land Use Code 560 - Church

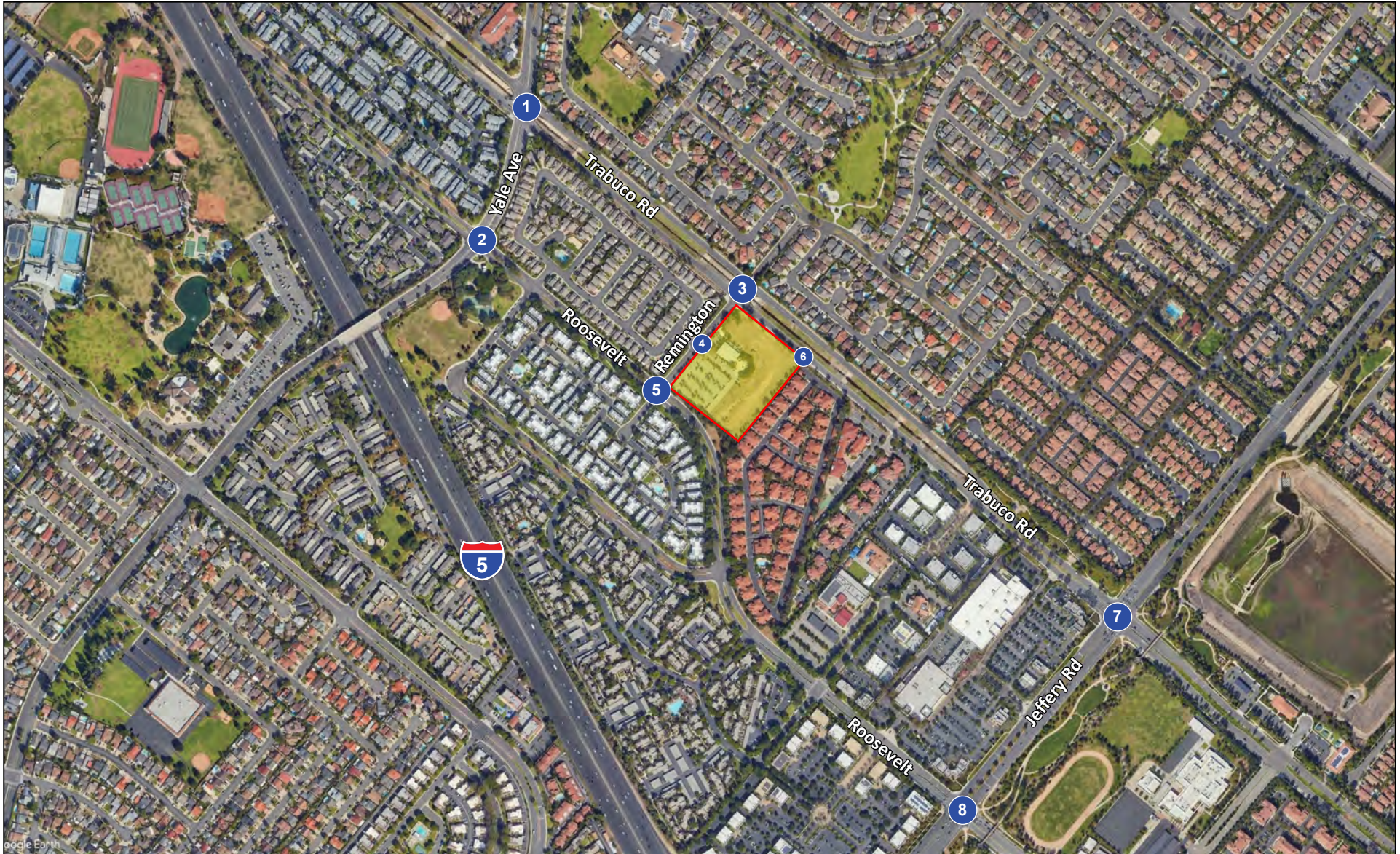
Land Use Code 220 - Multifamily Housing (Low Rise) - 2 or 3 Levels

du = dwelling unit

tsf = thousand square feet

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Site Summary :

Total Homes : 68

Site Area (Church) : ± 3.06 Acres
Site Area (Residential) : ± 2.94 Acres

Density : ± 23.1 Homes per Acre

3-STORY TOWNHOMES
OCCUPANCY R-2/U
1-HOUR FIRE PARTITIONS BETWEEN UNITS IN ACCORDANCE WITH SECTION 708 AND HORIZONTAL ASSEMBLIES IN ACCORDANCE WITH SECTIONS 711 (C.B.C. SECTIONS 420.2, 420.3)
TYPE V-B CONSTRUCTION WITH NFPA 13 SPRINKLER SYSTEM PER C.B.C. 903.3.1.1.

Plan 1 - 1,344 SF
Plan 2 - 1,466 SF
Plan 3 - 1,910 SF
Plan 3X - 1,878 SF

Parking Required:
1.6 Spaces / 2BR x 26 : 41.6
2.0 Spaces / 3BR x 42 : 84
0.25 Spaces / Unit x 68 : 17
Total Required : 142.6
: 143 (2.1:1)

Parking Provided:
Garage Spaces : 136
Uncovered Spaces : 9
Total Provided : 145 (2.13:1)

Church Spaces : 206

Landscape Coverage:

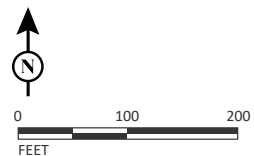
Residential
Required:
30% of site area : ±38,400 SF
Provided* : ±21,868 SF (17.1%)

Church
Required:
15% of site area : ±20,002 SF
Provided: : ±36,587 SF (27.4%)

Total Required : ±58,402 SF
Total Provided : ±58,455 SF



LSA



SOURCE: Bassenian Lagoni

I:\20241514\G\Site_Plan_v2.ai (5/1/2024)

6/5/24
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Our Lady of Peace Church and Residential
Site Plan

FIGURE 2

APPENDIX B

ITAM TRAFFIC FORECASTS

ITAM ICU Intersection Report Existing

255 - Yale Av. @ Trabuco Rd. Existing Base-ITAM TC V1.7						
		IRVINE				
	Ln	Cap	AM Peak Hour		PM Peak Hour	
			Vol	V/C	Vol	V/C
NBL	1	1700	160	0.09*	76	0.04
NBT	2	3400	279	0.08	516	0.15*
NBR	D	1700	93	0.05	193	0.11
SBL	1	1700	92	0.05	86	0.05*
SBT	2	3400	404	0.12*	353	0.10
SBR	D	1700	130	0.08	67	0.04
EBL	1	1700	45	0.03	82	0.05
EBT	2	3400	186	0.05*	340	0.10*
EBR	D	1700	62	0.04	82	0.05
WBL	1	1700	152	0.09*	103	0.06*
WBT	2	3400	375	0.11	240	0.07
WBR	D	1700	55	0.03	70	0.04
Adjustment Overlaps					Clearance	0.05
Total ICU				0.40		0.41

256 - Remington @ Trabuco Rd. Existing Base-ITAM TC V1.7						
		IRVINE				
	Ln	Cap	AM Peak Hour		PM Peak Hour	
			Vol	V/C	Vol	V/C
NBL	0		14	*	12	*
NBT	1	1700	82	0.06	36	0.03
NBR	D	1700	38	0.02	40	0.02
SBL	0		95		45	
SBT	1	1700	73	0.10*	22	0.04*
SBR	D	1700	95	0.06	49	0.03
EBL	1	1700	32	0.02*	72	0.04
EBT	2	3400	290	0.10	491	0.16*
EBR	0		36		45	
WBL	1	1700	49	0.03	41	0.02*
WBT	2	3400	477	0.16*	350	0.12
WBR	0		67		63	
Adjustment Overlaps					Clearance	0.05
Total ICU				0.33		0.27

257 - Yale Av. @ Roosevelt Existing Base-ITAM TC V1.7						
		IRVINE				
	Ln	Cap	AM Peak Hour		PM Peak Hour	
			Vol	V/C	Vol	V/C
NBL	1	1700	13	0.01	32	0.02
NBT	2	3400	388	0.11*	634	0.19*
NBR	D	1700	153	0.09	296	0.17
SBL	1	1700	109	0.06*	135	0.08*
SBT	2	3400	487	0.14	384	0.11
SBR	D	1700	18	0.01	20	0.01
EBL	1	1700	25	0.01	6	0.00
EBT	1	1700	34	0.02*	44	0.03*
EBR	D	1700	49	0.03	36	0.02
WBL	1	1700	269	0.16*	223	0.13*
WBT	1	1700	30	0.02	43	0.03
WBR	D	1700	135	0.08	149	0.09
Adjustment Overlaps					Clearance	0.05
Total ICU				0.40		0.48

258 - Remington @ Roosevelt Existing Base-ITAM TC V1.7						
		IRVINE				
	Ln	Cap	AM Peak Hour		PM Peak Hour	
			Vol	V/C	Vol	V/C
NBL	0		13	*	8	*
NBT	1	1700	21	0.03	9	0.02
NBR	0		22		16	
SBL	0		66		41	
SBT	1	1700	9	0.08*	15	0.06*
SBR	0		54		38	
EBL	1	1700	16	0.01*	29	0.02*
EBT	1	1700	227	0.13	307	0.18
EBR	D	1700	12	0.01	15	0.01
WBL	1	1700	5	0.00	23	0.01
WBT	1	1700	245	0.14*	339	0.20*
WBR	D	1700	70	0.04	40	0.02
Adjustment Overlaps					Clearance	0.05
Total ICU				0.28		0.33

285 - Jeffrey Rd. @ Trabuco Rd. Existing Base-ITAM TC V1.7						
		IRVINE				
	Ln	Cap	AM Peak Hour		PM Peak Hour	
			Vol	V/C	Vol	V/C
NBL	2	3400	71	0.02*	102	0.03
NBT	3	5100	721	0.14	1829	0.36*
NBR	1	1700	162	0.10	364	0.21
SBL	2	3400	153	0.05	93	0.03*
SBT	3	5100	1569	0.31*	850	0.17
SBR	1	1700	231	0.14	103	0.06
EBL	2	3400	155	0.05	273	0.08
EBT	2	3400	186	0.05*	297	0.09*
EBR	1	1700	114	0.07	110	0.06
WBL	2	3400	303	0.09*	245	0.07*
WBT	2	3400	316	0.09	250	0.07
WBR	1	1700	84	0.05	108	0.06
Adjustment Overlaps					Clearance	0.05
Total ICU				0.52		0.60

286 - Jeffrey Rd. @ Roosevelt Existing Base-ITAM TC V1.7						
		IRVINE				
	Ln	Cap	AM Peak Hour		PM Peak Hour	
			Vol	V/C	Vol	V/C
NBL	2	3400	154	0.05*	389	0.11
NBT	4	6800	595	0.09	2042	0.30*
NBR	1	1700	205	0.12	486	0.29
SBL	1	1700	40	0.02	59	0.03*
SBT	3	5100	1793	0.35*	949	0.19
SBR	D	1700	95	0.06	211	0.12
EBL	1	1700	58	0.03	223	0.13*
EBT	1	1700	100	0.06*	138	0.08
EBR	1	1700	327	0.19	335	0.20
WBL	2	3400	476	0.14*	218	0.06
WBT	1	1700	184	0.11	131	0.08*
WBR	1	1700	197	0.12	86	0.05
Adjustment Overlaps		E	EBR	0.08	Clearance	0.05
Total ICU				0.73		0.59

ITAM ICU Intersection Report Short-Term Approved Baseline

255 - Yale Av. @ Trabuco Rd. Short Term Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	124	0.07*	99	0.06		
NBT	2	3400	272	0.08	636	0.19*		
NBR	D	1700	121	0.07	239	0.14		
SBL	1	1700	188	0.11	107	0.06*		
SBT	2	3400	451	0.13*	328	0.10		
SBR	D	1700	210	0.12	60	0.04		
EBL	1	1700	43	0.03	147	0.09*		
EBT	2	3400	279	0.08*	443	0.13		
EBR	D	1700	49	0.03	107	0.06		
WBL	1	1700	170	0.10*	106	0.06		
WBT	2	3400	437	0.13	398	0.12*		
WBR	D	1700	73	0.04	183	0.11		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.43		0.51		

256 - Remington @ Trabuco Rd. Short Term Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		22	*	26			
NBT	1	1700	75	0.06	35	0.04*		
NBR	D	1700	31	0.02	14	0.01		
SBL	0		140		34	*		
SBT	1	1700	87	0.13*	19	0.03		
SBR	D	1700	131	0.08	45	0.03		
EBL	1	1700	47	0.03*	73	0.04*		
EBT	2	3400	509	0.15	534	0.16		
EBR	D	1700	52	0.03	47	0.03		
WBL	1	1700	33	0.02	26	0.02		
WBT	2	3400	697	0.21*	744	0.22*		
WBR	D	1700	72	0.04	51	0.03		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.42		0.35		

257 - Yale Av. @ Roosevelt Short Term Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	19	0.01*	55	0.03		
NBT	2	3400	350	0.10	732	0.22*		
NBR	D	1700	158	0.09	343	0.20		
SBL	1	1700	110	0.06	150	0.09*		
SBT	2	3400	544	0.16*	398	0.12		
SBR	D	1700	25	0.01	17	0.01		
EBL	1	1700	36	0.02	11	0.01		
EBT	1	1700	32	0.02*	32	0.02*		
EBR	D	1700	84	0.05	40	0.02		
WBL	1	1700	292	0.17*	195	0.11*		
WBT	1	1700	29	0.02	48	0.03		
WBR	D	1700	155	0.09	172	0.10		
Adjustment Overlaps			EBR	0.02	Clearance	0.05		
Total ICU				0.43		0.49		

258 - Remington @ Roosevelt Short Term Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		11	*	5	*		
NBT	1	1700	26	0.05	2	0.01		
NBR	0		52		8			
SBL	0		64		16			
SBT	1	1700	21	0.06*	7	0.02*		
SBR	0		17		14			
EBL	1	1700	35	0.02	8	0.00*		
EBT	1	1700	164	0.10*	91	0.05		
EBR	D	1700	5	0.00	12	0.01		
WBL	1	1700	5	0.00*	19	0.01		
WBT	1	1700	111	0.07	394	0.23*		
WBR	D	1700	53	0.03	23	0.01		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.21		0.30		

285 - Jeffrey Rd. @ Trabuco Rd. Short Term Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	54	0.02*	219	0.06		
NBT	3	5100	561	0.11	2142	0.42*		
NBR	1	1700	314	0.18	493	0.29		
SBL	2	3400	522	0.15	114	0.03*		
SBT	3	5100	1356	0.27*	786	0.15		
SBR	1	1700	117	0.07	89	0.05		
EBL	2	3400	65	0.02	198	0.06		
EBT	2	3400	422	0.12*	444	0.13*		
EBR	1	1700	142	0.08	123	0.07		
WBL	2	3400	505	0.15*	410	0.12*		
WBT	2	3400	432	0.13	533	0.16		
WBR	1	1700	141	0.08	265	0.16		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.61		0.75		

286 - Jeffrey Rd. @ Roosevelt Short Term Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	200	0.06*	547	0.16		
NBT	4	6800	556	0.08	2566	0.38*		
NBR	1	1700	251	0.15	746	0.44		
SBL	1	1700	65	0.04	96	0.06*		
SBT	3	5100	1901	0.37*	1016	0.20		
SBR	D	1700	50	0.03	132	0.08		
EBL	1	1700	40	0.02	163	0.10		
EBT	1	1700	114	0.07*	178	0.10*		
EBR	1	1700	431	0.25	442	0.26		
WBL	2	3400	1033	0.30*	366	0.11*		
WBT	1	1700	166	0.10	146	0.09		
WBR	1	1700	309	0.18	149	0.09		
Adjustment Overlaps			E	0.12	Clearance	0.05		
Total ICU				0.97		0.70		

ITAM ICU Intersection Report Short-Term Approved Plus Project

255 - Yale Av. @ Trabuco Rd. Short Term Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	121	0.07*	99	0.06		
NBT	2	3400	274	0.08	639	0.19*		
NBR	D	1700	117	0.07	239	0.14		
SBL	1	1700	194	0.11	106	0.06*		
SBT	2	3400	442	0.13*	327	0.10		
SBR	D	1700	217	0.13	60	0.04		
EBL	1	1700	45	0.03	147	0.09*		
EBT	2	3400	280	0.08*	443	0.13		
EBR	D	1700	47	0.03	107	0.06		
WBL	1	1700	165	0.10*	106	0.06		
WBT	2	3400	444	0.13	396	0.12*		
WBR	D	1700	77	0.05	183	0.11		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.43		0.51		

256 - Remington @ Trabuco Rd. Short Term Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		24	*	26			
NBT	1	1700	77	0.06	35	0.04*		
NBR	D	1700	32	0.02	14	0.01		
SBL	0		137		33	*		
SBT	1	1700	87	0.13*	19	0.03		
SBR	D	1700	135	0.08	45	0.03		
EBL	1	1700	48	0.03*	74	0.04*		
EBT	2	3400	511	0.15	532	0.16		
EBR	D	1700	54	0.03	47	0.03		
WBL	1	1700	32	0.02	26	0.02		
WBT	2	3400	696	0.20*	742	0.22*		
WBR	D	1700	69	0.04	50	0.03		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.41		0.35		

257 - Yale Av. @ Roosevelt Short Term Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	19	0.01*	55	0.03		
NBT	2	3400	349	0.10	735	0.22*		
NBR	D	1700	159	0.09	346	0.20		
SBL	1	1700	106	0.06	151	0.09*		
SBT	2	3400	532	0.16*	397	0.12		
SBR	D	1700	25	0.01	17	0.01		
EBL	1	1700	35	0.02	11	0.01		
EBT	1	1700	32	0.02*	32	0.02*		
EBR	D	1700	85	0.05	40	0.02		
WBL	1	1700	291	0.17*	195	0.11*		
WBT	1	1700	29	0.02	48	0.03		
WBR	D	1700	151	0.09	172	0.10		
Adjustment Overlaps			EBR	0.02	Clearance	0.05		
Total ICU				0.43		0.49		

258 - Remington @ Roosevelt Short Term Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		10	*	5	*		
NBT	1	1700	26	0.05	2	0.01		
NBR	0		53		8			
SBL	0		65		16			
SBT	1	1700	21	0.06*	7	0.02*		
SBR	0		16		14			
EBL	1	1700	34	0.02	8	0.00*		
EBT	1	1700	163	0.10*	93	0.05		
EBR	D	1700	5	0.00	11	0.01		
WBL	1	1700	6	0.00*	19	0.01		
WBT	1	1700	112	0.07	394	0.23*		
WBR	D	1700	55	0.03	23	0.01		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.21		0.30		

285 - Jeffrey Rd. @ Trabuco Rd. Short Term Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	54	0.02*	219	0.06		
NBT	3	5100	561	0.11	2142	0.42*		
NBR	1	1700	315	0.19	494	0.29		
SBL	2	3400	522	0.15	112	0.03*		
SBT	3	5100	1359	0.27*	791	0.16		
SBR	1	1700	116	0.07	87	0.05		
EBL	2	3400	64	0.02	196	0.06		
EBT	2	3400	423	0.12*	440	0.13*		
EBR	1	1700	143	0.08	126	0.07		
WBL	2	3400	507	0.15*	421	0.12*		
WBT	2	3400	428	0.13	532	0.16		
WBR	1	1700	140	0.08	265	0.16		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.61		0.75		

286 - Jeffrey Rd. @ Roosevelt Short Term Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	202	0.06*	552	0.16		
NBT	4	6800	558	0.08	2569	0.38*		
NBR	1	1700	250	0.15	748	0.44		
SBL	1	1700	65	0.04	97	0.06*		
SBT	3	5100	1908	0.37*	1030	0.20		
SBR	D	1700	51	0.03	134	0.08		
EBL	1	1700	41	0.02	164	0.10		
EBT	1	1700	114	0.07*	179	0.11*		
EBR	1	1700	435	0.26	445	0.26		
WBL	2	3400	1027	0.30*	366	0.11*		
WBT	1	1700	166	0.10	146	0.09		
WBR	1	1700	307	0.18	148	0.09		
Adjustment Overlaps			EBR	0.13	Clearance	0.05		
Total ICU				0.98		0.71		

ITAM ICU Intersection Report Long Range Approved Baseline

255 - Yale Av. @ Trabuco Rd. Long Range Approved No Project- ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	130	0.08*	110	0.06		
NBT	2	3400	283	0.08	717	0.21*		
NBR	D	1700	97	0.06	217	0.13		
SBL	1	1700	149	0.09	93	0.05*		
SBT	2	3400	504	0.15*	340	0.10		
SBR	D	1700	217	0.13	64	0.04		
EBL	1	1700	42	0.02	150	0.09*		
EBT	2	3400	207	0.06*	366	0.11		
EBR	D	1700	51	0.03	106	0.06		
WBL	1	1700	180	0.11*	92	0.05		
WBT	2	3400	425	0.13	355	0.10*		
WBR	D	1700	71	0.04	165	0.10		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.45		0.50		

256 - Remington @ Trabuco Rd. Long Range Approved No Project- ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		23	*	23			
NBT	1	1700	80	0.06	40	0.04*		
NBR	D	1700	31	0.02	15	0.01		
SBL	0		140		36	*		
SBT	1	1700	92	0.14*	22	0.03		
SBR	D	1700	139	0.08	41	0.02		
EBL	1	1700	38	0.02*	65	0.04*		
EBT	2	3400	376	0.11	448	0.13		
EBR	D	1700	41	0.02	42	0.02		
WBL	1	1700	33	0.02	30	0.02		
WBT	2	3400	708	0.21*	668	0.20*		
WBR	D	1700	75	0.04	57	0.03		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.42		0.33		

257 - Yale Av. @ Roosevelt Long Range Approved No Project- ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	20	0.01*	60	0.04		
NBT	2	3400	350	0.10	808	0.24*		
NBR	D	1700	147	0.09	339	0.20		
SBL	1	1700	112	0.07	140	0.08*		
SBT	2	3400	587	0.17*	402	0.12		
SBR	D	1700	29	0.02	17	0.01		
EBL	1	1700	37	0.02	12	0.01		
EBT	1	1700	31	0.02*	31	0.02*		
EBR	D	1700	86	0.05	42	0.02		
WBL	1	1700	292	0.17*	187	0.11*		
WBT	1	1700	31	0.02	46	0.03		
WBR	D	1700	157	0.09	169	0.10		
Adjustment Overlaps			EBR	0.02	Clearance	0.05		
Total ICU				0.44		0.50		

258 - Remington @ Roosevelt Long Range Approved No Project- ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		14	*	5	*		
NBT	1	1700	29	0.05	2	0.01		
NBR	0		46		8			
SBL	0		53		15			
SBT	1	1700	22	0.06*	8	0.02*		
SBR	0		20		14			
EBL	1	1700	40	0.02*	8	0.00*		
EBT	1	1700	146	0.09	88	0.05		
EBR	D	1700	5	0.00	13	0.01		
WBL	1	1700	5	0.00	20	0.01		
WBT	1	1700	111	0.07*	375	0.22*		
WBR	D	1700	47	0.03	24	0.01		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.20		0.29		

285 - Jeffrey Rd. @ Trabuco Rd. Long Range Approved No Project- ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	63	0.02*	196	0.06		
NBT	3	5100	595	0.12	2178	0.43*		
NBR	1	1700	207	0.12	279	0.16		
SBL	2	3400	401	0.12	78	0.02*		
SBT	4	6800	1599	0.24*	815	0.12		
SBR	1	1700	158	0.09	96	0.06		
EBL	2	3400	65	0.02	233	0.07*		
EBT	2	3400	264	0.08*	291	0.09		
EBR	1	1700	137	0.08	123	0.07		
WBL	2	3400	417	0.12*	332	0.10		
WBT	2	3400	406	0.12	449	0.13*		
WBR	1	1700	121	0.07	254	0.15		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.51		0.70		

286 - Jeffrey Rd. @ Roosevelt Long Range Approved No Project- ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	203	0.06*	530	0.16		
NBT	4	6800	533	0.08	2375	0.35*		
NBR	1	1700	203	0.12	691	0.41		
SBL	1	1700	59	0.03	97	0.06*		
SBT	3	5100	2025	0.40*	985	0.19		
SBR	D	1700	57	0.03	139	0.08		
EBL	1	1700	38	0.02	170	0.10		
EBT	0.5	850	90	0.14*	186	0.19*		
EBR	1.5	2550	397	0.14	443	0.19		
WBL	2	3400	973	0.29*	357	0.11*		
WBT	1	1700	168	0.10	154	0.09		
WBR	1	1700	295	0.17	150	0.09		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.94		0.76		

ITAM ICU Intersection Report Long Range Approved Plus Project

255 - Yale Av. @ Trabuco Rd. Long Range Approved With Project-ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	132	0.08*	111	0.07		
NBT	2	3400	282	0.08	707	0.21*		
NBR	D	1700	96	0.06	217	0.13		
SBL	1	1700	148	0.09	91	0.05*		
SBT	2	3400	498	0.15*	344	0.10		
SBR	D	1700	221	0.13	63	0.04		
EBL	1	1700	42	0.02	150	0.09*		
EBT	2	3400	206	0.06*	370	0.11		
EBR	D	1700	50	0.03	110	0.06		
WBL	1	1700	177	0.10*	93	0.05		
WBT	2	3400	432	0.13	350	0.10*		
WBR	D	1700	71	0.04	160	0.09		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.44		0.50		

256 - Remington @ Trabuco Rd. Long Range Approved With Project-ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		23	*	23			
NBT	1	1700	80	0.06	39	0.04*		
NBR	D	1700	31	0.02	14	0.01		
SBL	0		140		35	*		
SBT	1	1700	93	0.14*	23	0.03		
SBR	D	1700	137	0.08	41	0.02		
EBL	1	1700	37	0.02*	66	0.04*		
EBT	2	3400	374	0.11	447	0.13		
EBR	D	1700	41	0.02	45	0.03		
WBL	1	1700	35	0.02	30	0.02		
WBT	2	3400	713	0.21*	657	0.19*		
WBR	D	1700	76	0.04	56	0.03		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.42		0.32		

257 - Yale Av. @ Roosevelt Long Range Approved With Project-ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	20	0.01*	59	0.03		
NBT	2	3400	349	0.10	798	0.23*		
NBR	D	1700	148	0.09	333	0.20		
SBL	1	1700	111	0.07	144	0.08*		
SBT	2	3400	580	0.17*	404	0.12		
SBR	D	1700	28	0.02	18	0.01		
EBL	1	1700	37	0.02	12	0.01		
EBT	1	1700	31	0.02*	31	0.02*		
EBR	D	1700	87	0.05	42	0.02		
WBL	1	1700	301	0.18*	183	0.11*		
WBT	1	1700	31	0.02	47	0.03		
WBR	D	1700	159	0.09	172	0.10		
Adjustment Overlaps			EBR	0.02	Clearance	0.05		
Total ICU				0.45		0.49		

258 - Remington @ Roosevelt Long Range Approved With Project-ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		14	*	5	*		
NBT	1	1700	29	0.05	2	0.01		
NBR	0		46		8			
SBL	0		54		16			
SBT	1	1700	22	0.06*	8	0.02*		
SBR	0		21		14			
EBL	1	1700	40	0.02*	8	0.00*		
EBT	1	1700	146	0.09	88	0.05		
EBR	D	1700	5	0.00	12	0.01		
WBL	1	1700	5	0.00	20	0.01		
WBT	1	1700	114	0.07*	376	0.22*		
WBR	D	1700	48	0.03	23	0.01		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.20		0.29		

285 - Jeffrey Rd. @ Trabuco Rd. Long Range Approved With Project-ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	63	0.02*	198	0.06		
NBT	3	5100	594	0.12	2188	0.43*		
NBR	1	1700	208	0.12	283	0.17		
SBL	2	3400	404	0.12	77	0.02*		
SBT	4	6800	1597	0.23*	818	0.12		
SBR	1	1700	158	0.09	94	0.06		
EBL	2	3400	65	0.02	229	0.07*		
EBT	2	3400	265	0.08*	289	0.09		
EBR	1	1700	136	0.08	124	0.07		
WBL	2	3400	418	0.12*	332	0.10		
WBT	2	3400	410	0.12	438	0.13*		
WBR	1	1700	122	0.07	247	0.15		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.50		0.70		

286 - Jeffrey Rd. @ Roosevelt Long Range Approved With Project-ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	205	0.06*	533	0.16		
NBT	4	6800	533	0.08	2387	0.35*		
NBR	1	1700	202	0.12	688	0.40		
SBL	1	1700	59	0.03	97	0.06*		
SBT	3	5100	2023	0.40*	987	0.19		
SBR	D	1700	58	0.03	141	0.08		
EBL	1	1700	38	0.02	173	0.10		
EBT	0.5	850	90	0.14*	187	0.19*		
EBR	1.5	2550	402	0.14	446	0.19		
WBL	2	3400	978	0.29*	356	0.10*		
WBT	1	1700	170	0.10	155	0.09		
WBR	1	1700	295	0.17	151	0.09		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.94		0.75		

ITAM ICU Intersection Report Buildout Approved Baseline

255 - Yale Av. @ Trabuco Rd. Buildout Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	121	0.07*	112	0.07		
NBT	2	3400	280	0.08	696	0.20*		
NBR	D	1700	111	0.07	217	0.13		
SBL	1	1700	182	0.11	90	0.05*		
SBT	2	3400	528	0.16*	343	0.10		
SBR	D	1700	215	0.13	63	0.04		
EBL	1	1700	42	0.02	147	0.09*		
EBT	2	3400	242	0.07*	369	0.11		
EBR	D	1700	51	0.03	111	0.07		
WBL	1	1700	178	0.10*	96	0.06		
WBT	2	3400	398	0.12	361	0.11*		
WBR	D	1700	70	0.04	160	0.09		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.45		0.50		

256 - Remington @ Trabuco Rd. Buildout Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		22	*	23			
NBT	1	1700	79	0.06	41	0.04*		
NBR	D	1700	31	0.02	16	0.01		
SBL	0		150		40	*		
SBT	1	1700	98	0.15*	23	0.04		
SBR	D	1700	141	0.08	40	0.02		
EBL	1	1700	44	0.03*	63	0.04*		
EBT	2	3400	442	0.13	452	0.13		
EBR	D	1700	48	0.03	40	0.02		
WBL	1	1700	33	0.02	31	0.02		
WBT	2	3400	673	0.20*	676	0.20*		
WBR	D	1700	74	0.04	61	0.04		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.43		0.33		

257 - Yale Av. @ Roosevelt Buildout Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	19	0.01*	55	0.03		
NBT	2	3400	353	0.10	790	0.23*		
NBR	D	1700	139	0.08	334	0.20		
SBL	1	1700	111	0.07	150	0.09*		
SBT	2	3400	604	0.18*	398	0.12		
SBR	D	1700	30	0.02	17	0.01		
EBL	1	1700	42	0.02	12	0.01		
EBT	1	1700	33	0.02*	32	0.02*		
EBR	D	1700	96	0.06	41	0.02		
WBL	1	1700	281	0.17*	180	0.11*		
WBT	1	1700	30	0.02	45	0.03		
WBR	D	1700	155	0.09	175	0.10		
Adjustment Overlaps			EBR	0.03	Clearance	0.05		
Total ICU				0.46		0.50		

258 - Remington @ Roosevelt Buildout Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		12	*	5	*		
NBT	1	1700	30	0.06	2	0.01		
NBR	0		59		7			
SBL	0		63		15			
SBT	1	1700	23	0.06*	8	0.02*		
SBR	0		17		15			
EBL	1	1700	33	0.02	9	0.01*		
EBT	1	1700	152	0.09*	89	0.05		
EBR	D	1700	5	0.00	13	0.01		
WBL	1	1700	6	0.00*	19	0.01		
WBT	1	1700	112	0.07	385	0.23*		
WBR	D	1700	53	0.03	24	0.01		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.20		0.31		

285 - Jeffrey Rd. @ Trabuco Rd. Buildout Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	61	0.02*	212	0.06		
NBT	3	5100	588	0.12	2299	0.45*		
NBR	1	1700	233	0.14	291	0.17		
SBL	2	3400	462	0.14	66	0.02*		
SBT	4	6800	1697	0.25*	820	0.12		
SBR	1	1700	159	0.09	84	0.05		
EBL	2	3400	70	0.02	231	0.07*		
EBT	2	3400	325	0.10*	285	0.08		
EBR	1	1700	155	0.09	143	0.08		
WBL	2	3400	402	0.12*	383	0.11		
WBT	2	3400	372	0.11	451	0.13*		
WBR	1	1700	112	0.07	249	0.15		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.54		0.72		

286 - Jeffrey Rd. @ Roosevelt Buildout Approved No Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	202	0.06*	534	0.16		
NBT	4	6800	533	0.08	2481	0.36*		
NBR	1	1700	216	0.13	654	0.38		
SBL	1	1700	66	0.04	94	0.06*		
SBT	3	5100	2133	0.42*	1057	0.21		
SBR	D	1700	60	0.04	144	0.08		
EBL	1	1700	42	0.02	176	0.10		
EBT	1	1700	106	0.06*	174	0.10*		
EBR	2	3400	441	0.13	459	0.14		
WBL	2	3400	954	0.28*	378	0.11*		
WBT	1	1700	164	0.10	158	0.09		
WBR	1	1700	289	0.17	160	0.09		
Adjustment Overlaps			EBR	0.02	Clearance	0.05		
Total ICU				0.89		0.68		

ITAM ICU Intersection Report Buildout Approved Plus Project

255 - Yale Av. @ Trabuco Rd. Buildout Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	121	0.07*	114	0.07		
NBT	2	3400	281	0.08	692	0.20*		
NBR	D	1700	109	0.06	219	0.13		
SBL	1	1700	186	0.11	91	0.05*		
SBT	2	3400	528	0.16*	342	0.10		
SBR	D	1700	222	0.13	64	0.04		
EBL	1	1700	43	0.03	149	0.09*		
EBT	2	3400	242	0.07*	377	0.11		
EBR	D	1700	50	0.03	112	0.07		
WBL	1	1700	174	0.10*	95	0.06		
WBT	2	3400	403	0.12	366	0.11*		
WBR	D	1700	72	0.04	159	0.09		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.45		0.50		

256 - Remington @ Trabuco Rd. Buildout Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		22	*	22	*		
NBT	1	1700	79	0.06	40	0.04		
NBR	D	1700	31	0.02	15	0.01		
SBL	0		151		39			
SBT	1	1700	100	0.15*	23	0.04*		
SBR	D	1700	140	0.08	41	0.02		
EBL	1	1700	44	0.03*	65	0.04*		
EBT	2	3400	445	0.13	455	0.13		
EBR	D	1700	49	0.03	43	0.03		
WBL	1	1700	34	0.02	32	0.02		
WBT	2	3400	678	0.20*	680	0.20*		
WBR	D	1700	75	0.04	61	0.04		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.43		0.33		

257 - Yale Av. @ Roosevelt Buildout Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	1	1700	19	0.01*	55	0.03		
NBT	2	3400	352	0.10	788	0.23*		
NBR	D	1700	140	0.08	329	0.19		
SBL	1	1700	111	0.07	150	0.09*		
SBT	2	3400	600	0.18*	396	0.12		
SBR	D	1700	30	0.02	17	0.01		
EBL	1	1700	42	0.02	12	0.01		
EBT	1	1700	34	0.02*	32	0.02*		
EBR	D	1700	96	0.06	41	0.02		
WBL	1	1700	286	0.17*	178	0.10*		
WBT	1	1700	30	0.02	46	0.03		
WBR	D	1700	156	0.09	178	0.10		
Adjustment Overlaps			EBR	0.03	Clearance	0.05		
Total ICU				0.46		0.49		

258 - Remington @ Roosevelt Buildout Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	0		13	*	6	*		
NBT	1	1700	30	0.06	2	0.01		
NBR	0		58		8			
SBL	0		63		16			
SBT	1	1700	23	0.06*	8	0.02*		
SBR	0		18		15			
EBL	1	1700	34	0.02	8	0.00*		
EBT	1	1700	151	0.09*	89	0.05		
EBR	D	1700	5	0.00	12	0.01		
WBL	1	1700	6	0.00*	19	0.01		
WBT	1	1700	113	0.07	384	0.23*		
WBR	D	1700	52	0.03	23	0.01		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.20		0.30		

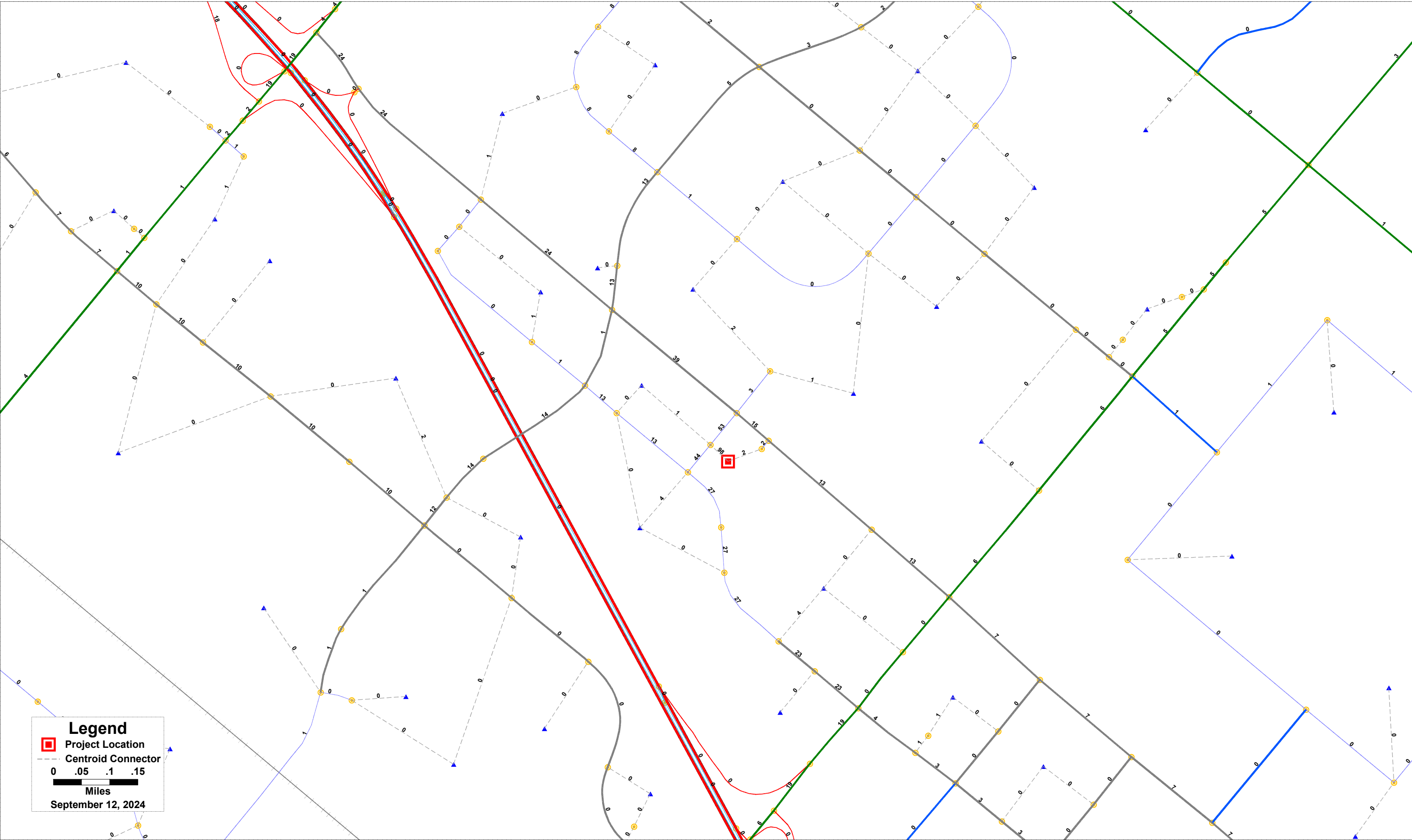
285 - Jeffrey Rd. @ Trabuco Rd. Buildout Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	62	0.02*	215	0.06		
NBT	3	5100	587	0.12	2304	0.45*		
NBR	1	1700	233	0.14	291	0.17		
SBL	2	3400	464	0.14	66	0.02*		
SBT	4	6800	1698	0.25*	819	0.12		
SBR	1	1700	160	0.09	85	0.05		
EBL	2	3400	71	0.02	231	0.07*		
EBT	2	3400	330	0.10*	285	0.08		
EBR	1	1700	157	0.09	143	0.08		
WBL	2	3400	404	0.12*	382	0.11		
WBT	2	3400	375	0.11	455	0.13*		
WBR	1	1700	112	0.07	249	0.15		
Adjustment Overlaps					Clearance	0.05		
Total ICU				0.54		0.72		

286 - Jeffrey Rd. @ Roosevelt Buildout Approved With Project - ITAM TC V1.7							IRVINE	
	Ln	Cap	AM Peak Hour		PM Peak Hour			
			Vol	V/C	Vol	V/C		
NBL	2	3400	203	0.06*	535	0.16		
NBT	4	6800	534	0.08	2489	0.37*		
NBR	1	1700	215	0.13	655	0.39		
SBL	1	1700	66	0.04	94	0.06*		
SBT	3	5100	2139	0.42*	1057	0.21		
SBR	D	1700	60	0.04	143	0.08		
EBL	1	1700	42	0.02	177	0.10		
EBT	1	1700	105	0.06*	175	0.10*		
EBR	2	3400	443	0.13	462	0.14		
WBL	2	3400	961	0.28*	380	0.11*		
WBT	1	1700	164	0.10	157	0.09		
WBR	1	1700	288	0.17	160	0.09		
Adjustment Overlaps			EBR	0.02	Clearance	0.05		
Total ICU				0.89		0.69		

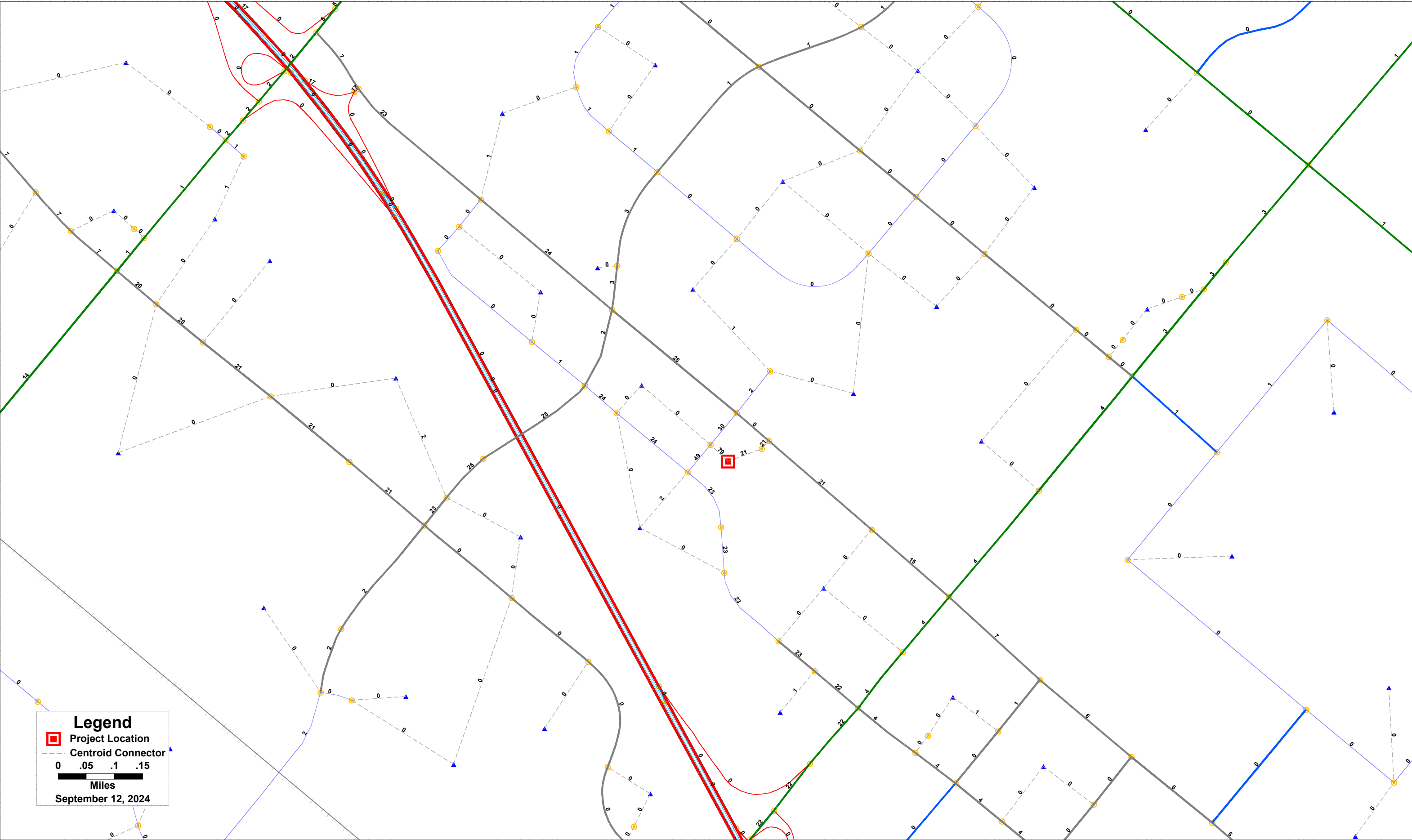
APPENDIX C

ITAM SELECT ZONE ASSIGNMENTS

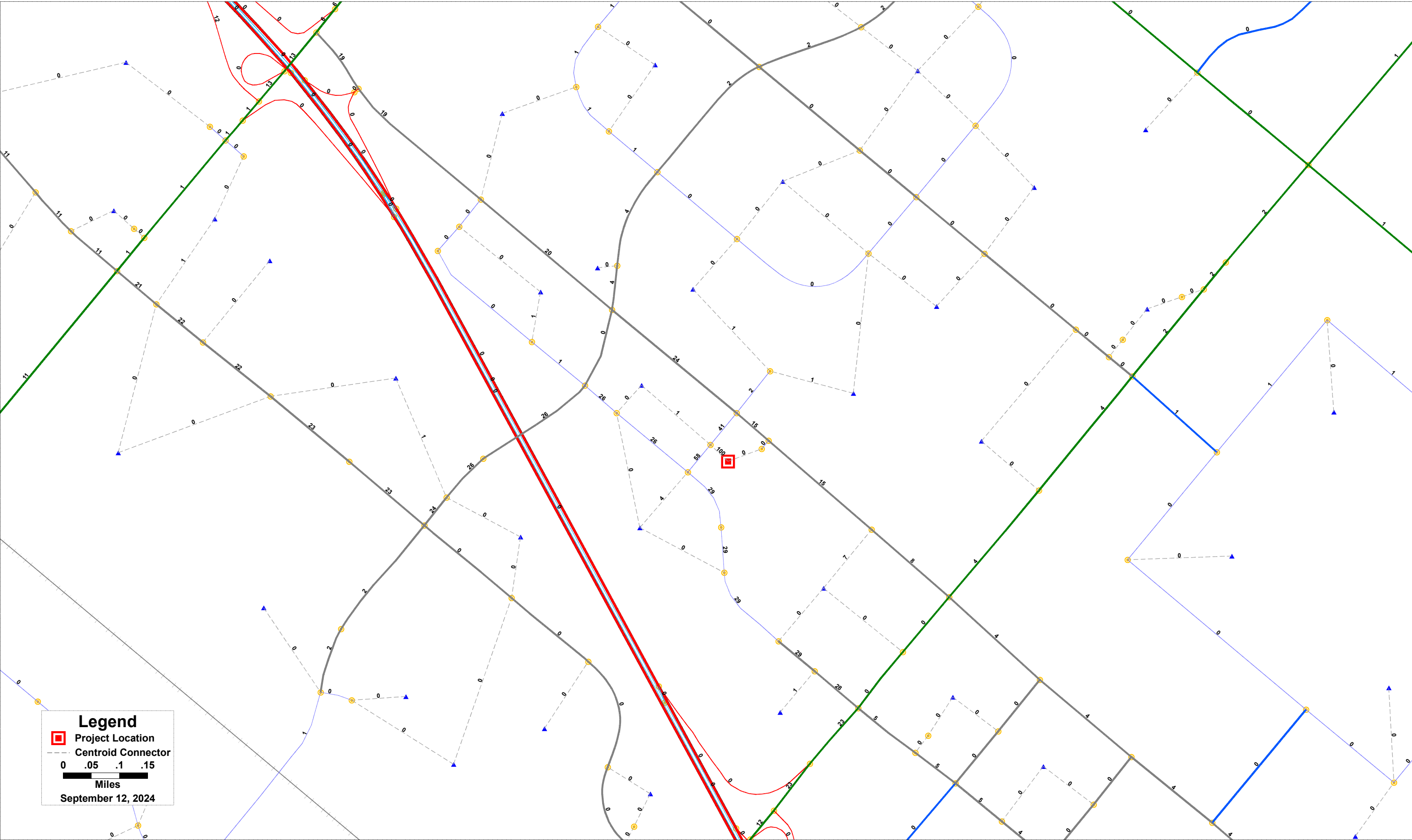
Our Lady of Peace Project AM Inbound Select Zone Distribution Percentages



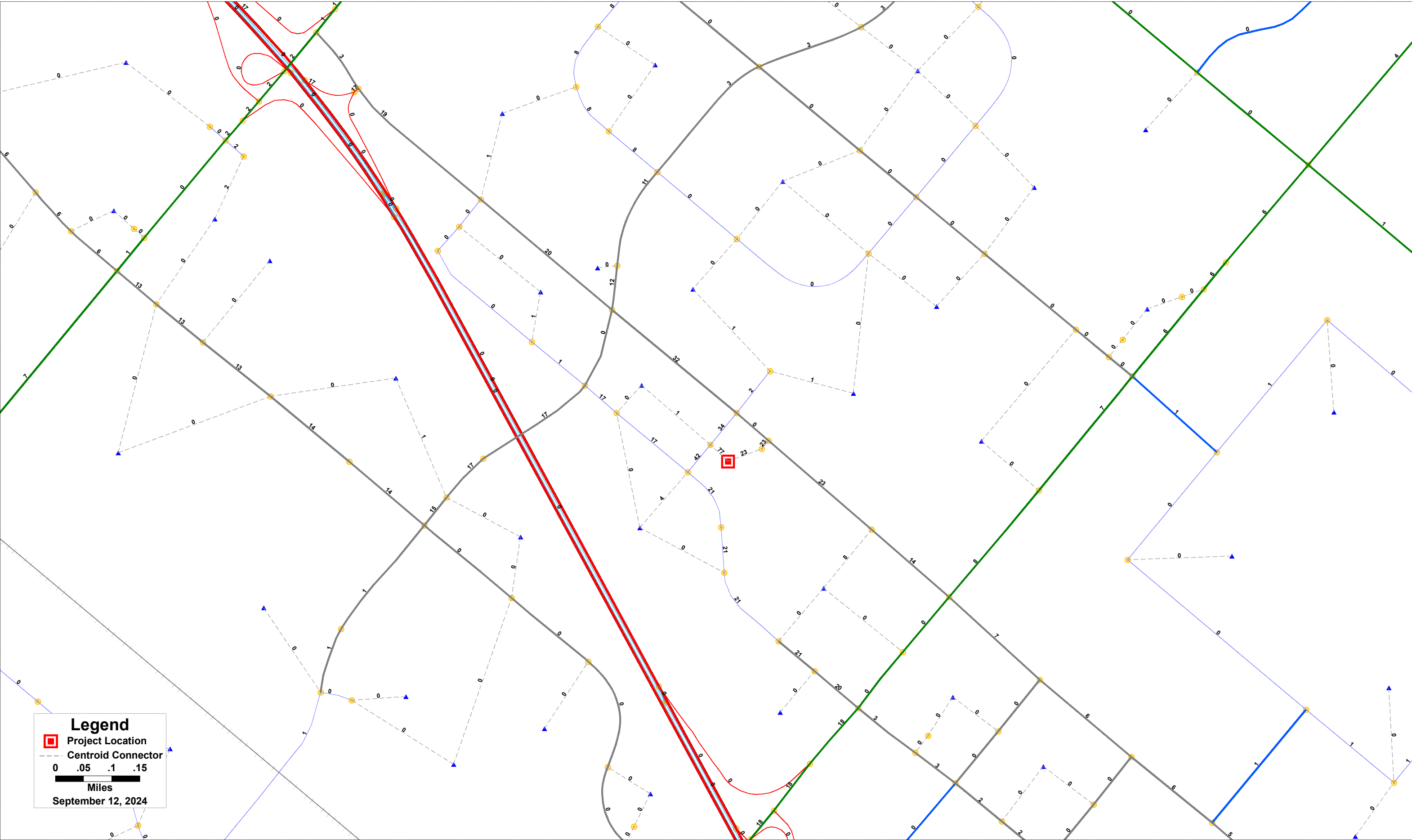
Our Lady of Peace Project AM Outbound Select Zone Distribution Percentages



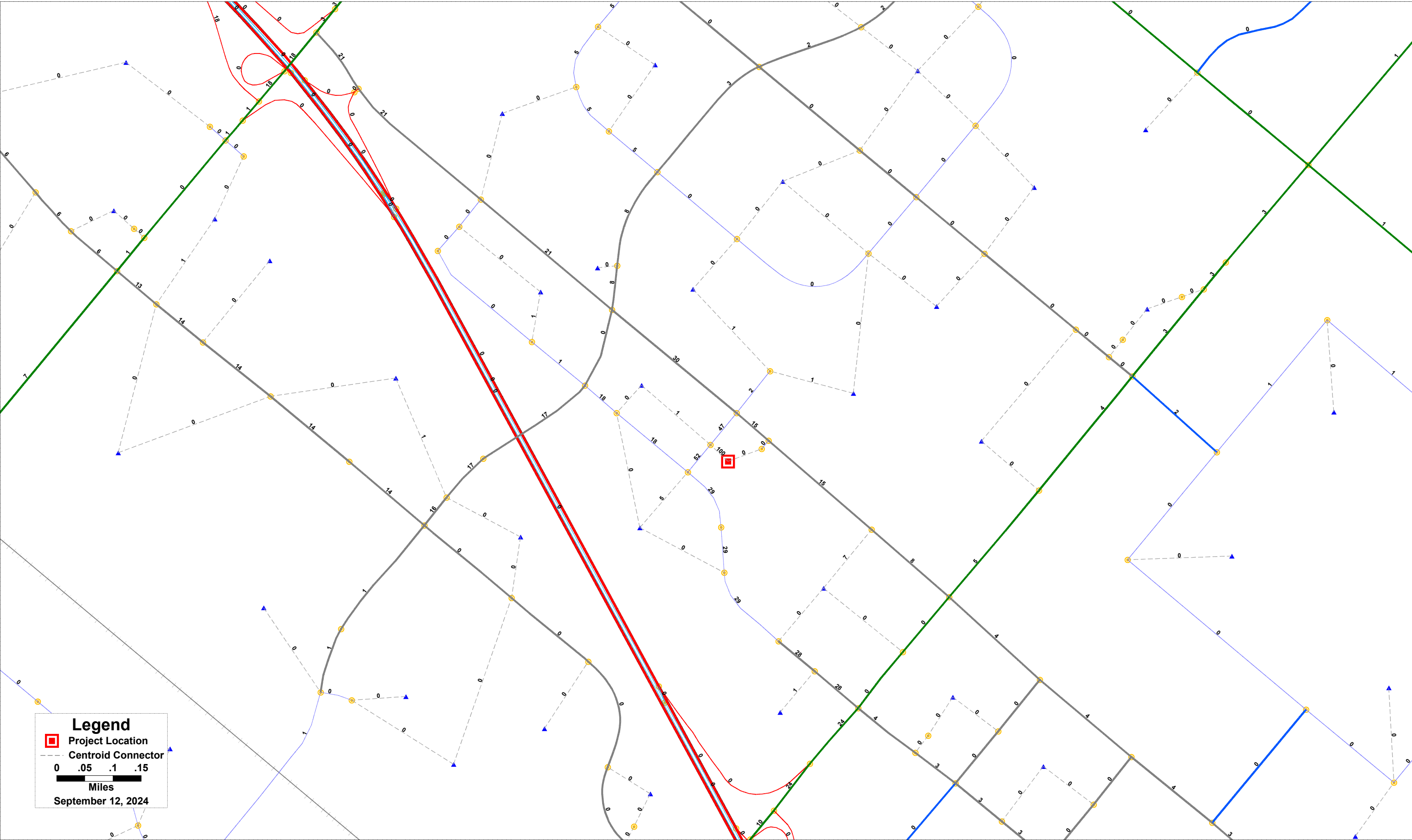
Our Lady of Peace Project PM Inbound Select Zone Distribution Percentages



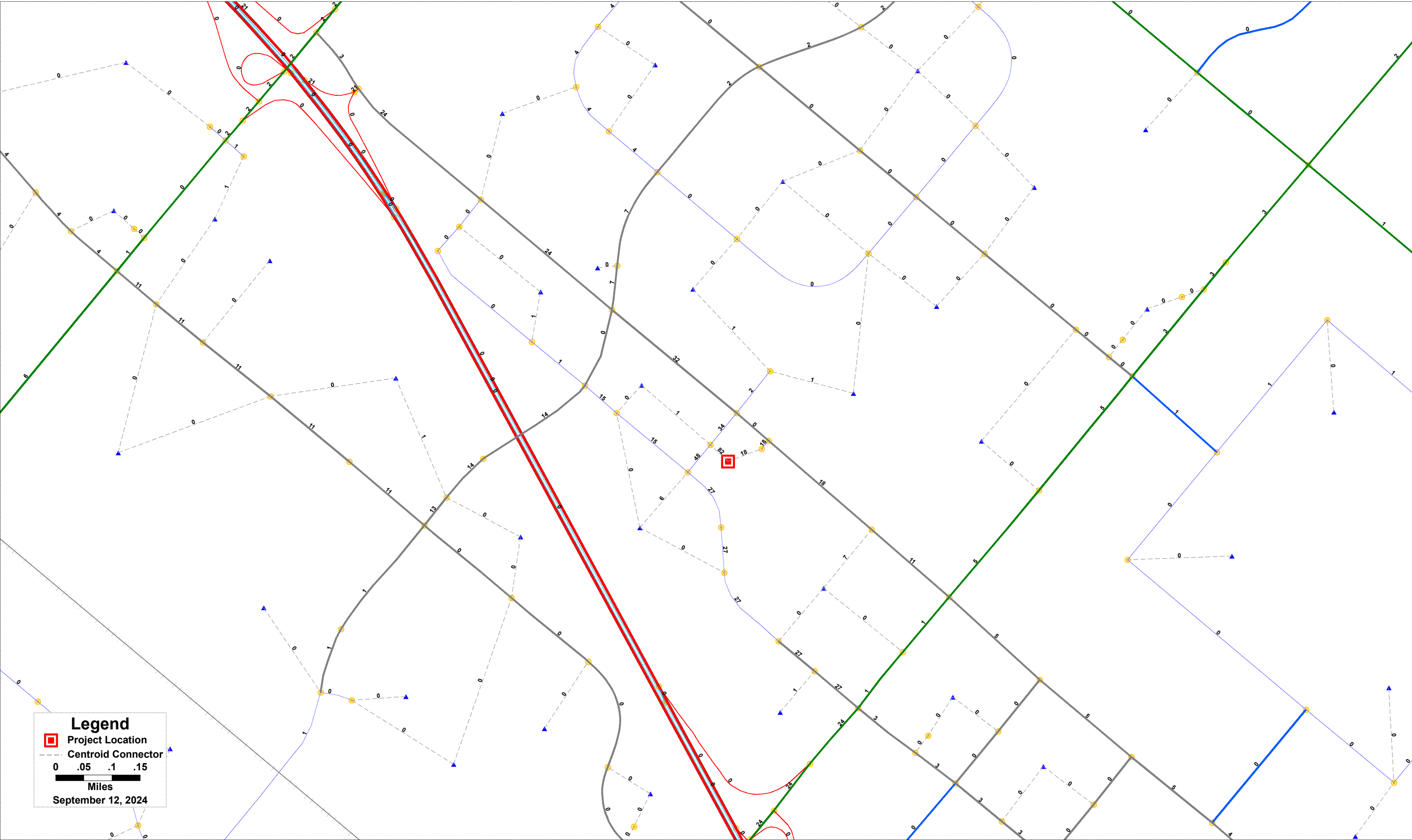
Our Lady of Peace Project PM Outbound Select Zone Distribution Percentages



Our Lady of Peace Project Daily Inbound Select Zone Distribution Percentages



Our Lady of Peace Project Daily Outbound Select Zone Distribution Percentages



APPENDIX D

EXISTING TRAFFIC COUNTS

Location: Irvine
N/S: Yale Avenue
E/W: Trabuco Road



ITAM: 255
Date: 2/27/2024
Day: Tuesday

		Yale Avenue Southbound			Trabuco Road Westbound			Yale Avenue Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		3	12	17	4	25	10	29	13	4	1	14	9	141
7:15 AM		13	15	20	8	52	5	25	21	8	3	18	4	192
7:30 AM		14	49	29	9	37	5	37	58	14	6	32	2	292
7:45 AM		14	78	26	34	93	29	33	95	21	13	48	15	499
8:00 AM		22	103	48	56	107	13	46	78	27	19	52	13	584
8:15 AM		27	108	34	41	132	9	44	48	31	5	42	18	539
8:30 AM		12	95	31	31	98	11	60	59	20	6	36	14	473
8:45 AM		25	93	17	20	115	12	29	40	17	6	54	17	445
TOTAL VOLUMES:		130	553	222	203	659	94	303	412	142	59	296	92	3165

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	75	384	139	162	430	62	183	280	99	43	178	60	2095

PEAK HR FACTOR:	0.864	0.898	0.930	0.836	0.897
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		Yale Avenue Southbound			Trabuco Road Westbound			Yale Avenue Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		18	75	17	32	74	18	29	94	32	19	74	21	503
4:15 PM		23	70	16	15	63	15	23	106	44	23	69	12	479
4:30 PM		20	77	16	18	88	31	22	72	23	19	51	19	456
4:45 PM		22	73	26	19	55	25	22	95	35	24	66	16	478
5:00 PM		27	90	17	26	58	18	24	105	46	21	57	22	511
5:15 PM		23	64	9	21	58	21	18	99	49	16	99	33	510
5:30 PM		15	121	14	34	50	14	21	146	52	15	86	18	586
5:45 PM		19	87	20	29	55	20	9	102	51	24	84	22	522
6:00 PM		38	61	17	20	40	11	29	132	64	16	76	17	521
6:15 PM		21	74	18	17	53	15	23	82	45	16	94	26	484
TOTAL VOLUMES:		226	792	170	231	594	188	220	1033	441	193	756	206	5050

PM Peak Hr Begins at: 515 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	95	333	60	104	203	66	77	479	216	71	345	90	2139

PEAK HR FACTOR:	0.813	0.897	0.858	0.855	0.913
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Location: Irvine
N/S: Yale Avenue
E/W: Trabuco Road



ITAM: 255
Date: 2/29/2024
Day: Thursday

		Yale Avenue Southbound			Trabuco Road Westbound			Yale Avenue Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		3	12	25	2	34	2	29	20	2	4	20	7	160
7:15 AM		7	24	20	6	32	9	24	23	14	5	23	7	194
7:30 AM		10	42	26	11	46	4	36	33	17	8	24	2	259
7:45 AM		15	69	23	34	57	28	28	63	16	13	37	8	391
8:00 AM		37	79	30	58	89	16	38	114	38	14	49	17	579
8:15 AM		27	124	34	43	90	17	44	65	27	11	43	21	546
8:30 AM		26	119	35	21	69	6	34	42	10	14	42	12	430
8:45 AM		18	101	22	19	71	9	20	56	11	7	60	14	408
TOTAL VOLUMES:		143	570	215	194	488	91	253	416	135	76	298	88	2967

AM Peak Hr Begins at: 800 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	108	423	121	141	319	48	136	277	86	46	194	64	1963

PEAK HR FACTOR:	0.881	0.779	0.657	0.938	0.848
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		Yale Avenue Southbound			Trabuco Road Westbound			Yale Avenue Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		24	58	17	25	70	9	21	90	27	23	57	14	435
4:15 PM		14	84	20	14	56	29	24	113	37	13	92	15	511
4:30 PM		19	64	16	11	58	18	25	110	35	22	73	23	474
4:45 PM		23	81	22	15	82	24	24	93	20	24	59	22	489
5:00 PM		20	98	18	18	68	11	19	130	31	22	82	8	525
5:15 PM		14	94	18	26	67	23	15	162	31	22	68	27	567
5:30 PM		22	101	17	22	62	21	19	147	52	27	95	20	605
5:45 PM		20	79	21	36	79	19	22	113	56	22	89	19	575
6:00 PM		18	72	11	20	48	16	24	101	53	23	79	27	492
6:15 PM		16	73	17	12	49	14	24	93	34	25	76	16	449
TOTAL VOLUMES:		190	804	177	199	639	184	217	1152	376	223	770	191	5122

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	76	372	74	102	276	74	75	552	170	93	334	74	2272

PEAK HR FACTOR:	0.932	0.843	0.914	0.882	0.939
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Location: Irvine
N/S: Yale Avenue
E/W: Roosevelt



ITAM: 257
Date: 2/27/2024
Day: Tuesday

		Yale Avenue Southbound			Roosevelt Westbound			Yale Avenue Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		5	20	1	26	2	13	1	34	10	0	5	4	121
7:15 AM		6	18	1	25	6	13	0	39	8	3	8	11	138
7:30 AM		8	51	1	30	3	36	0	66	13	11	9	13	241
7:45 AM		16	101	5	55	5	52	4	93	26	12	16	8	393
8:00 AM		41	134	7	85	10	40	0	115	28	5	9	10	484
8:15 AM		21	143	4	78	19	24	6	106	56	1	6	18	482
8:30 AM		21	124	1	47	8	26	3	94	35	3	4	17	383
8:45 AM		24	81	2	45	6	17	1	67	24	2	3	10	282
TOTAL VOLUMES:		142	672	22	391	59	221	15	614	200	37	60	91	2524

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	99	502	17	265	42	142	13	408	145	21	35	53	1742

PEAK HR FACTOR:	0.849	0.831	0.842	0.757	0.900
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		Yale Avenue Southbound			Roosevelt Westbound			Yale Avenue Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		32	96	4	56	13	33	5	128	62	2	11	6	448
4:15 PM		25	77	5	36	11	27	3	136	54	0	6	14	394
4:30 PM		27	83	0	51	8	35	2	92	51	1	2	7	359
4:45 PM		34	79	2	20	12	23	9	119	62	1	7	11	379
5:00 PM		35	94	5	50	8	37	10	135	59	4	16	12	465
5:15 PM		36	81	5	50	6	26	13	143	87	1	10	10	468
5:30 PM		41	106	5	64	6	48	9	167	91	1	8	11	557
5:45 PM		32	118	4	51	8	27	7	160	70	3	12	4	496
6:00 PM		23	67	6	59	19	36	5	166	69	2	9	12	473
6:15 PM		35	80	4	54	10	23	16	123	74	3	7	15	444
TOTAL VOLUMES:		320	881	40	491	101	315	79	1369	679	18	88	102	4483

PM Peak Hr Begins at: 515 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	132	372	20	224	39	137	34	636	317	7	39	37	1994

PEAK HR FACTOR:	0.851	0.847	0.924	0.902	0.895
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Location: Irvine
N/S: Yale Avenue
E/W: Roosevelt



ITAM: 257
Date: 2/29/2024
Day: Thursday

		Yale Avenue Southbound			Roosevelt Westbound			Yale Avenue Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		7	15	0	20	5	11	1	43	11	0	4	5	122
7:15 AM		7	25	3	21	6	10	0	48	15	0	5	7	147
7:30 AM		8	42	0	35	4	22	1	62	16	4	11	13	218
7:45 AM		17	101	1	65	2	29	3	79	36	11	9	11	364
8:00 AM		20	117	7	95	2	58	2	121	36	12	7	9	486
8:15 AM		47	140	4	76	8	29	3	91	54	4	6	10	472
8:30 AM		34	114	7	37	5	11	5	77	35	1	10	14	350
8:45 AM		18	104	2	40	8	15	1	70	28	2	3	13	304
TOTAL VOLUMES:		158	658	24	389	40	185	16	591	231	34	55	82	2463

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	118	472	19	273	17	127	13	368	161	28	32	44	1672

PEAK HR FACTOR:	0.797	0.673	0.852	0.839	0.860
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		Yale Avenue Southbound			Roosevelt Westbound			Yale Avenue Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		12	87	3	56	11	37	8	106	54	1	14	6	395
4:15 PM		27	84	3	29	13	33	4	148	51	1	6	9	408
4:30 PM		23	73	2	42	19	40	4	117	41	2	10	11	384
4:45 PM		23	97	2	41	8	20	7	118	53	1	9	9	388
5:00 PM		30	78	8	43	9	38	6	141	68	2	7	5	435
5:15 PM		36	97	8	61	11	41	11	162	74	4	14	12	531
5:30 PM		29	111	1	55	11	47	4	169	76	1	9	7	520
5:45 PM		43	103	6	55	8	35	7	163	70	0	17	5	512
6:00 PM		29	85	5	50	17	37	7	137	54	0	9	11	441
6:15 PM		25	68	1	32	10	21	8	117	57	2	9	4	354
TOTAL VOLUMES:		277	883	39	464	117	349	66	1378	598	14	104	79	4368

PM Peak Hr Begins at: 515 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	137	396	20	221	47	160	29	631	274	5	49	35	2004

PEAK HR FACTOR:	0.910	0.947	0.938	0.742	0.944
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City of Irvine
N/S: Remington
E/W: Trabuco Road
Weather: Clear

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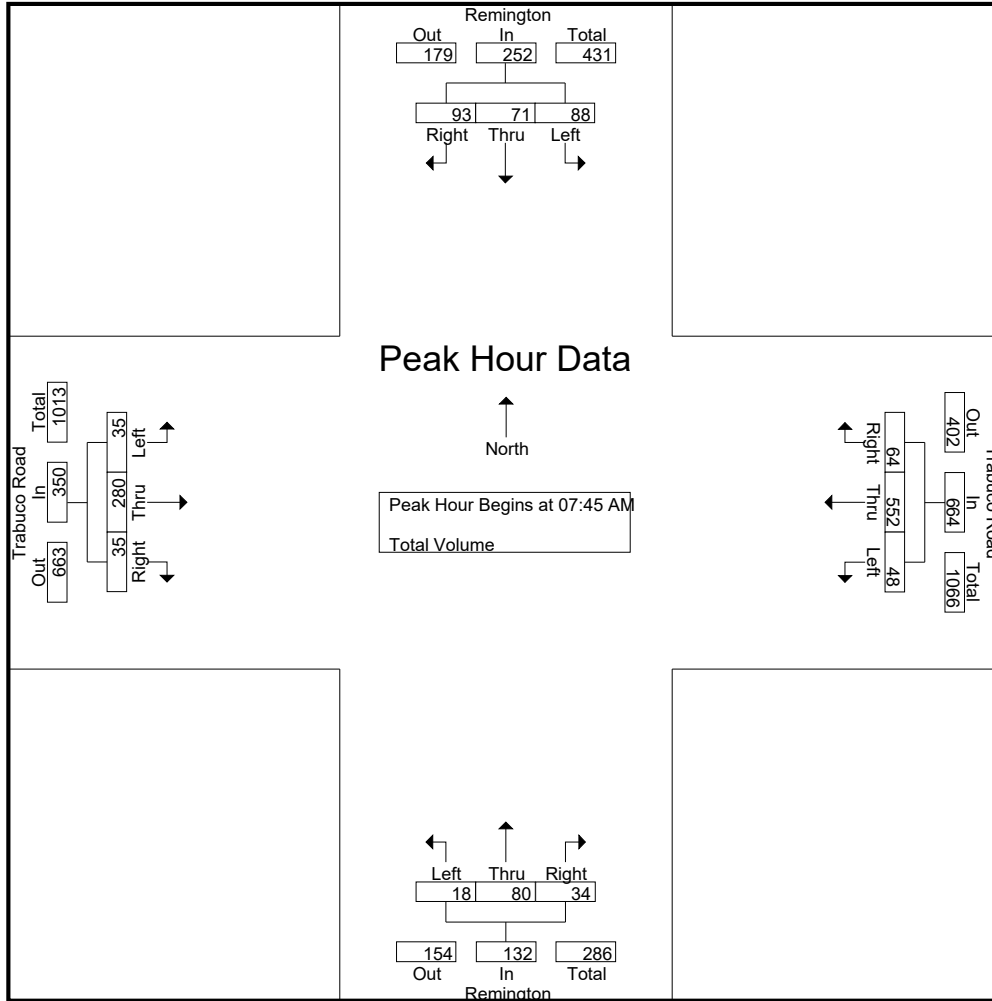
Groups Printed- Total Volume

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	8	0	14	22	3	25	5	33	9	5	15	29	1	17	5	23	107
07:15 AM	15	3	18	36	0	35	8	43	8	1	11	20	3	32	3	38	137
07:30 AM	15	6	21	42	3	40	7	50	11	3	8	22	6	51	6	63	177
07:45 AM	15	9	16	40	12	127	8	147	9	23	11	43	2	71	9	82	312
Total	53	18	69	140	18	227	28	273	37	32	45	114	12	171	23	206	733
08:00 AM	24	30	32	86	16	146	38	200	3	42	11	56	13	68	9	90	432
08:15 AM	37	26	28	91	10	146	8	164	3	13	7	23	17	82	8	107	385
08:30 AM	12	6	17	35	10	133	10	153	3	2	5	10	3	59	9	71	269
08:45 AM	16	5	17	38	7	116	6	129	1	3	6	10	4	81	12	97	274
Total	89	67	94	250	43	541	62	646	10	60	29	99	37	290	38	365	1360
Grand Total	142	85	163	390	61	768	90	919	47	92	74	213	49	461	61	571	2093
Apprch %	36.4	21.8	41.8		6.6	83.6	9.8		22.1	43.2	34.7		8.6	80.7	10.7		
Total %	6.8	4.1	7.8	18.6	2.9	36.7	4.3	43.9	2.2	4.4	3.5	10.2	2.3	22	2.9	27.3	

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	15	9	16	40	12	127	8	147	9	23	11	43	2	71	9	82	312
08:00 AM	24	30	32	86	16	146	38	200	3	42	11	56	13	68	9	90	432
08:15 AM	37	26	28	91	10	146	8	164	3	13	7	23	17	82	8	107	385
08:30 AM	12	6	17	35	10	133	10	153	3	2	5	10	3	59	9	71	269
Total Volume	88	71	93	252	48	552	64	664	18	80	34	132	35	280	35	350	1398
% App. Total	34.9	28.2	36.9		7.2	83.1	9.6		13.6	60.6	25.8		10	80	10		
PHF	.595	.592	.727	.692	.750	.945	.421	.830	.500	.476	.773	.589	.515	.854	.972	.818	.809

City of Irvine
N/S: Remington
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:30 AM				07:45 AM				07:30 AM				08:00 AM			
+0 mins.	15	6	21	42	12	127	8	147	11	3	8	22	13	68	9	90
+15 mins.	15	9	16	40	16	146	38	200	9	23	11	43	17	82	8	107
+30 mins.	24	30	32	86	10	146	8	164	3	42	11	56	3	59	9	71
+45 mins.	37	26	28	91	10	133	10	153	3	13	7	23	4	81	12	97
Total Volume	91	71	97	259	48	552	64	664	26	81	37	144	37	290	38	365
% App. Total	35.1	27.4	37.5		7.2	83.1	9.6		18.1	56.2	25.7		10.1	79.5	10.4	
PHF	.615	.592	.758	.712	.750	.945	.421	.830	.591	.482	.841	.643	.544	.884	.792	.853

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City of Irvine
N/S: Remington
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File Name : 256_IRV_Rem_Tra Tu PM
Site Code : 19224028
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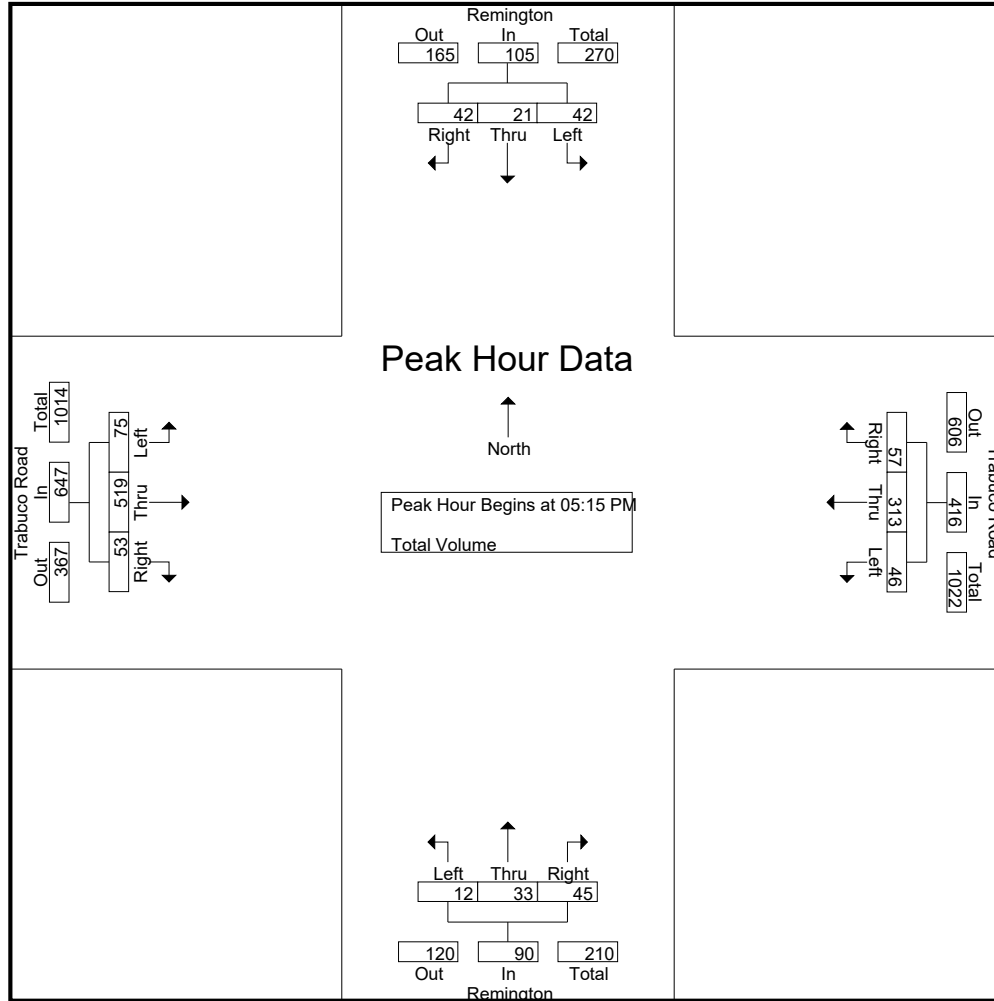
Groups Printed- Total Volume

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	9	10	10	29	13	104	11	128	6	5	14	25	12	82	13	107	289
04:15 PM	7	5	10	22	12	98	20	130	4	12	9	25	19	102	10	131	308
04:30 PM	9	3	17	29	9	112	15	136	3	5	16	24	14	68	10	92	281
04:45 PM	15	7	12	34	15	84	10	109	2	4	9	15	18	91	12	121	279
Total	40	25	49	114	49	398	56	503	15	26	48	89	63	343	45	451	1157
05:00 PM	15	4	9	28	8	96	18	122	1	6	11	18	13	107	5	125	293
05:15 PM	12	4	12	28	15	86	13	114	0	10	8	18	19	133	16	168	328
05:30 PM	9	9	11	29	9	87	10	106	2	12	15	29	19	122	12	153	317
05:45 PM	11	5	11	27	13	82	18	113	4	2	13	19	21	117	10	148	307
Total	47	22	43	112	45	351	59	455	7	30	47	84	72	479	43	594	1245
06:00 PM	10	3	8	21	9	58	16	83	6	9	9	24	16	147	15	178	306
06:15 PM	0	2	8	10	8	75	15	98	0	5	7	12	15	121	23	159	279
Grand Total	97	52	108	257	111	882	146	1139	28	70	111	209	166	1090	126	1382	2987
Apprch %	37.7	20.2	42		9.7	77.4	12.8		13.4	33.5	53.1		12	78.9	9.1		
Total %	3.2	1.7	3.6	8.6	3.7	29.5	4.9	38.1	0.9	2.3	3.7	7	5.6	36.5	4.2	46.3	

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	12	4	12	28	15	86	13	114	0	10	8	18	19	133	16	168	328
05:30 PM	9	9	11	29	9	87	10	106	2	12	15	29	19	122	12	153	317
05:45 PM	11	5	11	27	13	82	18	113	4	2	13	19	21	117	10	148	307
06:00 PM	10	3	8	21	9	58	16	83	6	9	9	24	16	147	15	178	306
Total Volume	42	21	42	105	46	313	57	416	12	33	45	90	75	519	53	647	1258
% App. Total	40	20	40		11.1	75.2	13.7		13.3	36.7	50		11.6	80.2	8.2		
PHF	.875	.583	.875	.905	.767	.899	.792	.912	.500	.688	.750	.776	.893	.883	.828	.909	.959

City of Irvine
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Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:30 PM				04:00 PM				05:15 PM				05:15 PM			
+0 mins.	9	3	17	29	13	104	11	128	0	10	8	18	19	133	16	168
+15 mins.	15	7	12	34	12	98	20	130	2	12	15	29	19	122	12	153
+30 mins.	15	4	9	28	9	112	15	136	4	2	13	19	21	117	10	148
+45 mins.	12	4	12	28	15	84	10	109	6	9	9	24	16	147	15	178
Total Volume	51	18	50	119	49	398	56	503	12	33	45	90	75	519	53	647
% App. Total	42.9	15.1	42		9.7	79.1	11.1		13.3	36.7	50		11.6	80.2	8.2	
PHF	.850	.643	.735	.875	.817	.888	.700	.925	.500	.688	.750	.776	.893	.883	.828	.909

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City of Irvine
N/S: Remington
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File Name : 256_IRV_Rem_Tra Th AM
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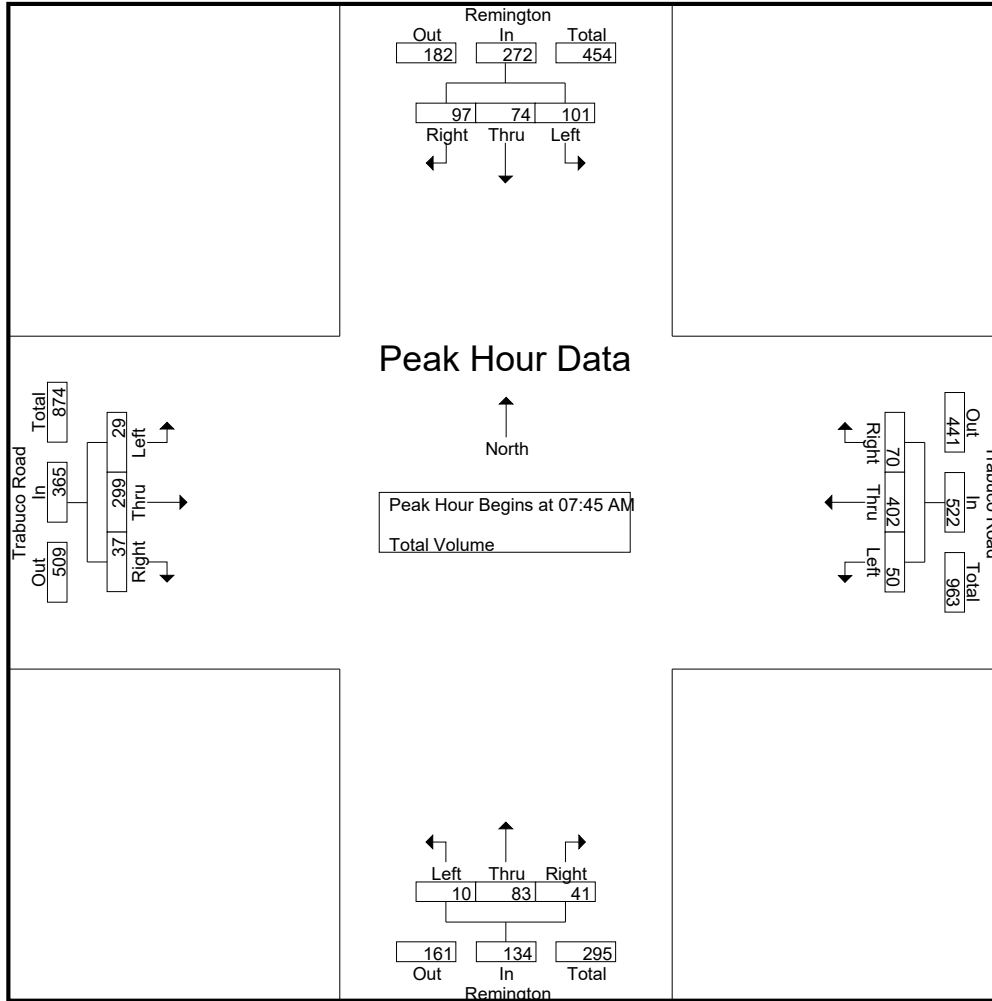
Groups Printed- Total Volume

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	8	1	16	25	0	18	6	24	4	5	4	13	2	24	2	28	90
07:15 AM	13	1	16	30	3	41	13	57	6	4	12	22	4	30	4	38	147
07:30 AM	13	4	19	36	9	48	8	65	5	4	9	18	6	46	7	59	178
07:45 AM	21	12	23	56	11	84	13	108	5	18	19	42	4	55	7	66	272
Total	55	18	74	147	23	191	40	254	20	31	44	95	16	155	20	191	687
08:00 AM	27	26	31	84	14	130	40	184	0	58	12	70	9	108	7	124	462
08:15 AM	35	32	22	89	11	105	9	125	4	6	4	14	10	79	8	97	325
08:30 AM	18	4	21	43	14	83	8	105	1	1	6	8	6	57	15	78	234
08:45 AM	14	3	15	32	25	72	2	99	2	2	6	10	9	68	15	92	233
Total	94	65	89	248	64	390	59	513	7	67	28	102	34	312	45	391	1254
Grand Total	149	83	163	395	87	581	99	767	27	98	72	197	50	467	65	582	1941
Apprch %	37.7	21	41.3		11.3	75.7	12.9		13.7	49.7	36.5		8.6	80.2	11.2		
Total %	7.7	4.3	8.4	20.4	4.5	29.9	5.1	39.5	1.4	5	3.7	10.1	2.6	24.1	3.3	30	

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	21	12	23	56	11	84	13	108	5	18	19	42	4	55	7	66	272
08:00 AM	27	26	31	84	14	130	40	184	0	58	12	70	9	108	7	124	462
08:15 AM	35	32	22	89	11	105	9	125	4	6	4	14	10	79	8	97	325
08:30 AM	18	4	21	43	14	83	8	105	1	1	6	8	6	57	15	78	234
Total Volume	101	74	97	272	50	402	70	522	10	83	41	134	29	299	37	365	1293
% App. Total	37.1	27.2	35.7		9.6	77	13.4		7.5	61.9	30.6		7.9	81.9	10.1		
PHF	.721	.578	.782	.764	.893	.773	.438	.709	.500	.358	.539	.479	.725	.692	.617	.736	.700

City of Irvine
N/S: Remington
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	07:45 AM				07:45 AM				07:15 AM				08:00 AM			
+0 mins.	21	12	23	56	11	84	13	108	6	4	12	22	9	108	7	124
+15 mins.	27	26	31	84	14	130	40	184	5	4	9	18	10	79	8	97
+30 mins.	35	32	22	89	11	105	9	125	5	18	19	42	6	57	15	78
+45 mins.	18	4	21	43	14	83	8	105	0	58	12	70	9	68	15	92
Total Volume	101	74	97	272	50	402	70	522	16	84	52	152	34	312	45	391
% App. Total	37.1	27.2	35.7		9.6	77	13.4		10.5	55.3	34.2		8.7	79.8	11.5	
PHF	.721	.578	.782	.764	.893	.773	.438	.709	.667	.362	.684	.543	.850	.722	.750	.788

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City of Irvine
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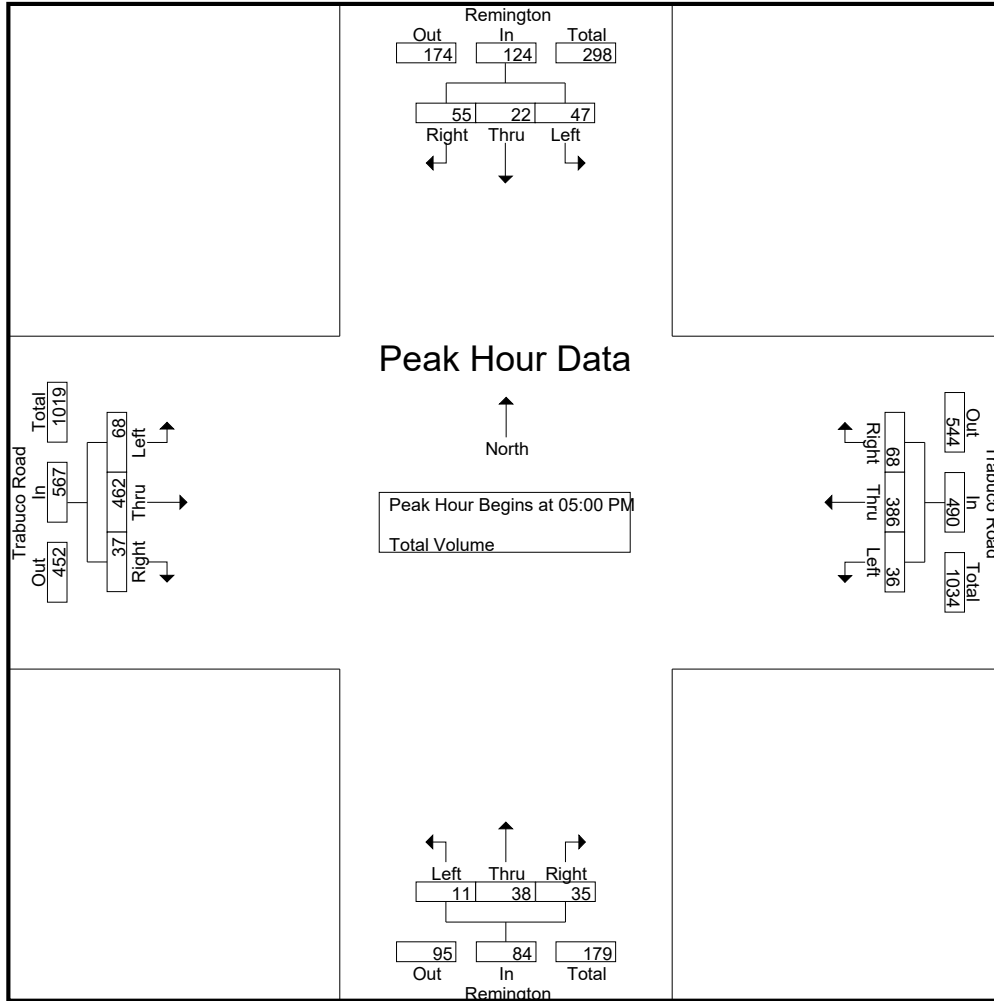
Groups Printed- Total Volume

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	6	4	7	17	10	83	7	100	1	6	3	10	8	76	17	101	228
04:15 PM	15	7	8	30	9	92	14	115	2	5	3	10	14	113	11	138	293
04:30 PM	13	6	11	30	6	81	12	99	1	8	7	16	15	96	10	121	266
04:45 PM	9	6	7	22	13	118	16	147	2	12	10	24	8	85	9	102	295
Total	43	23	33	99	38	374	49	461	6	31	23	60	45	370	47	462	1082
05:00 PM	15	6	15	36	6	85	24	115	4	7	11	22	20	102	7	129	302
05:15 PM	9	7	15	31	7	94	16	117	1	6	9	16	12	99	7	118	282
05:30 PM	13	2	15	30	10	88	15	113	3	12	7	22	23	128	13	164	329
05:45 PM	10	7	10	27	13	119	13	145	3	13	8	24	13	133	10	156	352
Total	47	22	55	124	36	386	68	490	11	38	35	84	68	462	37	567	1265
06:00 PM	7	2	10	19	12	68	16	96	3	9	10	22	19	121	11	151	288
06:15 PM	12	2	10	24	10	66	10	86	0	4	7	11	13	110	8	131	252
Grand Total	109	49	108	266	96	894	143	1133	20	82	75	177	145	1063	103	1311	2887
Apprch %	41	18.4	40.6		8.5	78.9	12.6		11.3	46.3	42.4		11.1	81.1	7.9		
Total %	3.8	1.7	3.7	9.2	3.3	31	5	39.2	0.7	2.8	2.6	6.1	5	36.8	3.6	45.4	

	Remington Southbound				Trabuco Road Westbound				Remington Northbound				Trabuco Road Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	15	6	15	36	6	85	24	115	4	7	11	22	20	102	7	129	302
05:15 PM	9	7	15	31	7	94	16	117	1	6	9	16	12	99	7	118	282
05:30 PM	13	2	15	30	10	88	15	113	3	12	7	22	23	128	13	164	329
05:45 PM	10	7	10	27	13	119	13	145	3	13	8	24	13	133	10	156	352
Total Volume	47	22	55	124	36	386	68	490	11	38	35	84	68	462	37	567	1265
% App. Total	37.9	17.7	44.4		7.3	78.8	13.9		13.1	45.2	41.7		12	81.5	6.5		
PHF	.783	.786	.917	.861	.692	.811	.708	.845	.688	.731	.795	.875	.739	.868	.712	.864	.898

City of Irvine
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E/W: Trabuco Road
Weather: Clear

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Start Date : 2/29/2024
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Peak Hour Analysis From 04:00 PM to 06:15 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	05:00 PM				04:45 PM				04:45 PM				05:30 PM			
+0 mins.	15	6	15	36	13	118	16	147	2	12	10	24	23	128	13	164
+15 mins.	9	7	15	31	6	85	24	115	4	7	11	22	13	133	10	156
+30 mins.	13	2	15	30	7	94	16	117	1	6	9	16	19	121	11	151
+45 mins.	10	7	10	27	10	88	15	113	3	12	7	22	13	110	8	131
Total Volume	47	22	55	124	36	385	71	492	10	37	37	84	68	492	42	602
% App. Total	37.9	17.7	44.4		7.3	78.3	14.4		11.9	44	44		11.3	81.7	7	
PHF	.783	.786	.917	.861	.692	.816	.740	.837	.625	.771	.841	.875	.739	.925	.808	.918

Location: Irvine
 N/S: Remington
 E/W: Trabuco Road



ITAM: 256
 Date: 2/27/2024
 Day: Tuesday

PEDESTRIANS

	North Leg Remington	East Leg Trabuco Road	South Leg Remington	West Leg Trabuco Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	1	0	3	1	5
7:15 AM	2	0	2	0	4
7:30 AM	0	0	1	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	0	1	1
8:30 AM	0	0	0	0	0
8:45 AM	0	0	0	0	0
TOTAL VOLUMES:	3	0	6	2	11

	North Leg Remington	East Leg Trabuco Road	South Leg Remington	West Leg Trabuco Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	1	0	0	1	2
4:15 PM	0	0	0	0	0
4:30 PM	0	1	1	1	3
4:45 PM	1	1	1	0	3
5:00 PM	0	0	0	0	0
5:15 PM	0	0	2	1	3
5:30 PM	0	0	6	0	6
5:45 PM	0	0	0	0	0
6:00 PM	0	0	6	0	6
6:15 PM	0	0	0	0	0
TOTAL VOLUMES:	2	2	16	3	23

Location: Irvine
 N/S: Remington
 E/W: Trabuco Road



ITAM: 256
 Date: 2/27/2024
 Day: Tuesday

BICYCLES

	Southbound Remington			Westbound Trabuco Road			Northbound Remington			Eastbound Trabuco Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	0	1	0	0	0	0	0	0	0	0	0	0	1
8:15 AM	0	0	0	0	2	0	0	1	0	0	1	0	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:45 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
TOTAL VOLUMES:	0	1	0	0	3	0	0	1	0	0	1	0	6

	Southbound Remington			Westbound Trabuco Road			Northbound Remington			Eastbound Trabuco Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	1	0	0	0	0	0	0	0	0	0	1	0	2
4:15 PM	0	0	0	1	0	0	0	0	0	0	0	0	1
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
4:45 PM	0	0	0	0	0	0	0	1	0	0	0	0	1
5:00 PM	0	0	0	0	2	1	0	1	0	0	0	0	4
5:15 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:30 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	3	0	0	0	0	0	0	0	3
TOTAL VOLUMES:	1	0	0	1	5	1	0	2	0	0	3	0	13

Location: Irvine
 N/S: Remington
 E/W: Trabuco Road



ITAM: 256
 Date: 2/29/2024
 Day: Thursday

PEDESTRIANS

	North Leg Remington	East Leg Trabuco Road	South Leg Remington	West Leg Trabuco Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
7:00 AM	0	0	2	0	2
7:15 AM	1	0	3	1	5
7:30 AM	0	0	1	0	1
7:45 AM	0	0	0	0	0
8:00 AM	0	0	0	0	0
8:15 AM	0	0	1	0	1
8:30 AM	0	0	1	0	1
8:45 AM	1	0	0	0	1
TOTAL VOLUMES:	2	0	8	1	11

	North Leg Remington	East Leg Trabuco Road	South Leg Remington	West Leg Trabuco Road	
	Pedestrians	Pedestrians	Pedestrians	Pedestrians	
4:00 PM	1	0	1	0	2
4:15 PM	4	0	0	0	4
4:30 PM	0	2	1	0	3
4:45 PM	1	2	3	0	6
5:00 PM	0	1	1	0	2
5:15 PM	0	0	1	1	2
5:30 PM	0	1	1	0	2
5:45 PM	1	0	2	0	3
6:00 PM	1	0	0	0	1
6:15 PM	0	0	0	0	0
TOTAL VOLUMES:	8	6	10	1	25

Location: Irvine
 N/S: Remington
 E/W: Trabuco Road



ITAM: 256
 Date: 2/29/2024
 Day: Thursday

BICYCLES

	Southbound Remington			Westbound Trabuco Road			Northbound Remington			Eastbound Trabuco Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	1	0	0	0	0	0	0	0	0	2	0	3
7:45 AM	0	0	0	0	0	0	0	1	1	0	0	0	2
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	1	0	1	3	0	0	1	0	0	0	0	6
8:30 AM	0	0	0	0	1	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL VOLUMES:	0	2	0	1	4	0	0	2	1	0	2	0	12

	Southbound Remington			Westbound Trabuco Road			Northbound Remington			Eastbound Trabuco Road			
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
4:00 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
4:15 PM	0	0	0	0	0	0	0	1	0	0	2	0	3
4:30 PM	0	0	0	1	0	0	0	0	0	0	1	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	1
5:30 PM	0	0	0	0	0	0	0	3	0	0	2	0	5
5:45 PM	0	0	0	0	0	0	0	0	0	0	1	0	1
6:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
6:15 PM	0	0	0	0	2	0	0	0	0	0	1	0	3
TOTAL VOLUMES:	0	1	0	1	2	0	0	4	0	0	9	0	17

City of Irvine
N/S: Remington
E/W: Danvill Street
Weather: Clear

File Name : 01_IRV_Rem_Dan AM
Site Code : 00324491
Start Date : 5/21/2024
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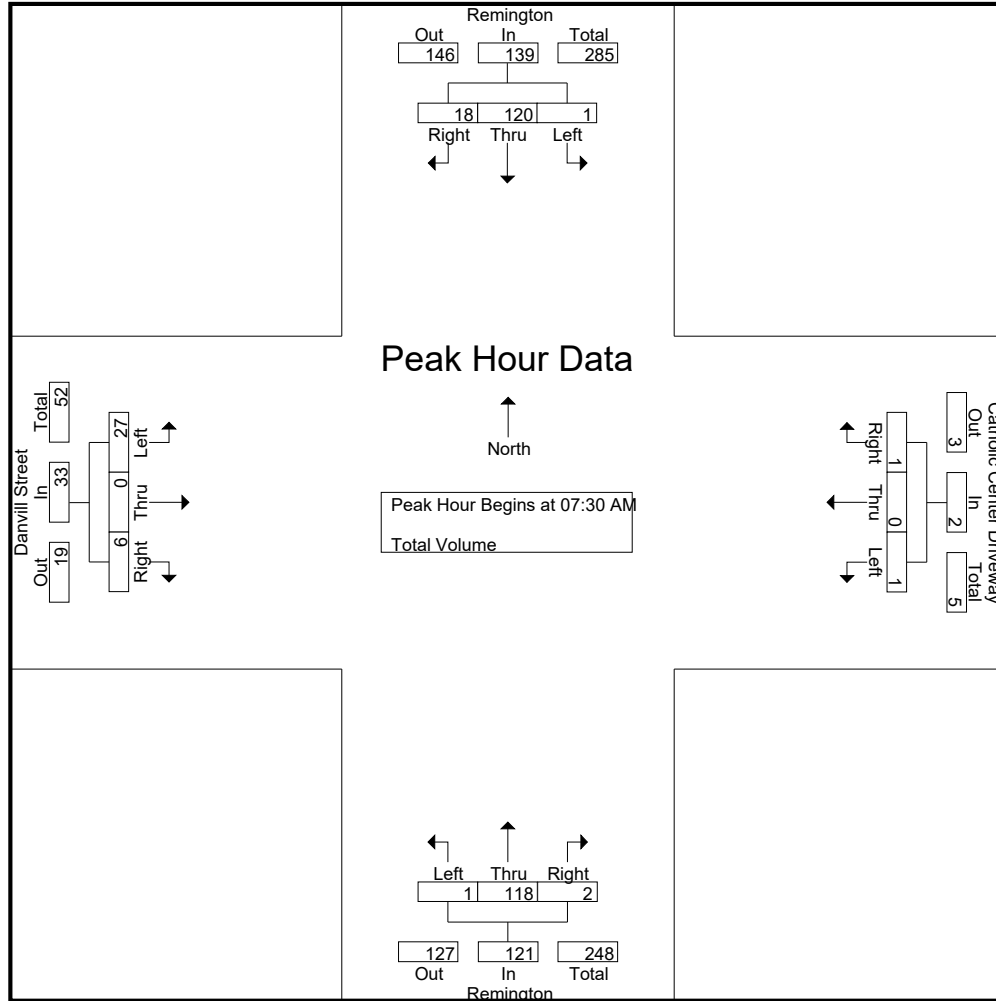
Groups Printed- Total Volume

	Remington Southbound				Catholic Center Driveway Westbound				Remington Northbound				Danvill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	0	2	1	3	2	0	12	14	0	7	0	7	2	0	3	5	29
07:15 AM	0	7	1	8	1	0	1	2	1	11	0	12	1	0	2	3	25
07:30 AM	0	11	0	11	0	0	0	0	1	20	0	21	5	0	0	5	37
07:45 AM	1	26	2	29	0	0	0	0	0	39	1	40	9	0	2	11	80
Total	1	46	4	51	3	0	13	16	2	77	1	80	17	0	7	24	171
08:00 AM	0	43	9	52	1	0	1	2	0	50	0	50	11	0	1	12	116
08:15 AM	0	40	7	47	0	0	0	0	0	9	1	10	2	0	3	5	62
08:30 AM	2	11	2	15	0	0	2	2	0	6	0	6	0	0	1	1	24
08:45 AM	0	12	1	13	0	0	0	0	0	5	0	5	3	0	0	3	21
Total	2	106	19	127	1	0	3	4	0	70	1	71	16	0	5	21	223
Grand Total	3	152	23	178	4	0	16	20	2	147	2	151	33	0	12	45	394
Apprch %	1.7	85.4	12.9		20	0	80		1.3	97.4	1.3		73.3	0	26.7		
Total %	0.8	38.6	5.8	45.2	1	0	4.1	5.1	0.5	37.3	0.5	38.3	8.4	0	3	11.4	

	Remington Southbound				Catholic Center Driveway Westbound				Remington Northbound				Danvill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:30 AM																	
07:30 AM	0	11	0	11	0	0	0	0	1	20	0	21	5	0	0	5	37
07:45 AM	1	26	2	29	0	0	0	0	0	39	1	40	9	0	2	11	80
08:00 AM	0	43	9	52	1	0	1	2	0	50	0	50	11	0	1	12	116
08:15 AM	0	40	7	47	0	0	0	0	0	9	1	10	2	0	3	5	62
Total Volume	1	120	18	139	1	0	1	2	1	118	2	121	27	0	6	33	295
% App. Total	0.7	86.3	12.9		50	0	50		0.8	97.5	1.7		81.8	0	18.2		
PHF	.250	.698	.500	.668	.250	.000	.250	.250	.250	.590	.500	.605	.614	.000	.500	.688	.636

City of Irvine
N/S: Remington
E/W: Danvill Street
Weather: Clear

File Name : 01_IRV_Rem_Dan AM
Site Code : 00324491
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:00 AM				07:15 AM				07:30 AM			
+0 mins.	1	26	2	29	2	0	12	14	1	11	0	12	5	0	0	5
+15 mins.	0	43	9	52	1	0	1	2	1	20	0	21	9	0	2	11
+30 mins.	0	40	7	47	0	0	0	0	0	39	1	40	11	0	1	12
+45 mins.	2	11	2	15	0	0	0	0	0	50	0	50	2	0	3	5
Total Volume	3	120	20	143	3	0	13	16	2	120	1	123	27	0	6	33
% App. Total	2.1	83.9	14		18.8	0	81.2		1.6	97.6	0.8		81.8	0	18.2	
PHF	.375	.698	.556	.688	.375	.000	.271	.286	.500	.600	.250	.615	.614	.000	.500	.688

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Corona, CA 92878
(951) 268-6268

City of Irvine
N/S: Remington
E/W: Danvill Street
Weather: Clear

File Name : 01_IRV_Rem_Dan PM
Site Code : 00324491
Start Date : 5/21/2024
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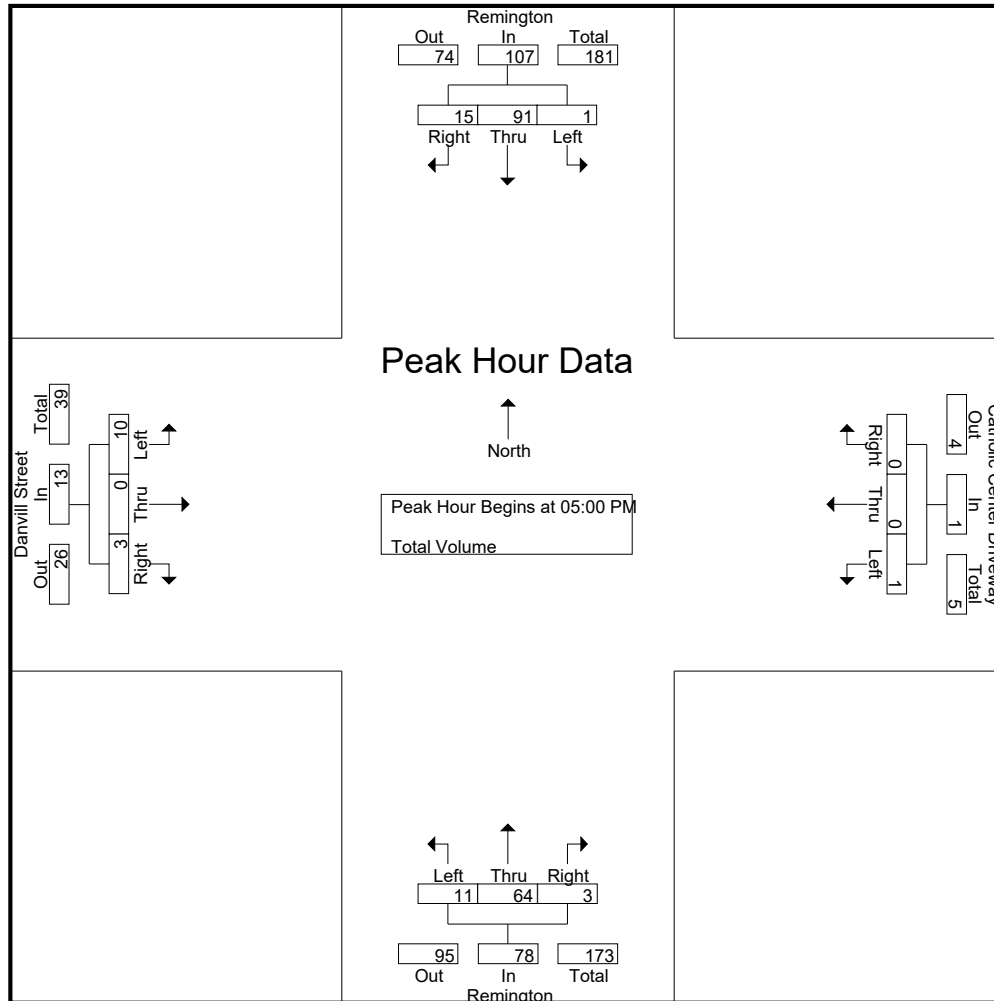
Groups Printed- Total Volume

	Remington Southbound				Catholic Center Driveway Westbound				Remington Northbound				Danvill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	25	3	28	0	0	0	0	1	23	1	25	3	0	1	4	57
04:15 PM	1	20	3	24	0	0	0	0	0	11	0	11	1	0	1	2	37
04:30 PM	0	11	2	13	3	0	0	3	1	15	1	17	0	0	2	2	35
04:45 PM	0	28	1	29	0	1	1	2	1	13	1	15	2	0	3	5	51
Total	1	84	9	94	3	1	1	5	3	62	3	68	6	0	7	13	180
05:00 PM	0	19	2	21	0	0	0	0	0	16	1	17	0	0	0	0	38
05:15 PM	0	17	5	22	0	0	0	0	4	16	0	20	4	0	1	5	47
05:30 PM	1	20	2	23	1	0	0	1	4	15	0	19	3	0	0	3	46
05:45 PM	0	35	6	41	0	0	0	0	3	17	2	22	3	0	2	5	68
Total	1	91	15	107	1	0	0	1	11	64	3	78	10	0	3	13	199
Grand Total	2	175	24	201	4	1	1	6	14	126	6	146	16	0	10	26	379
Apprch %	1	87.1	11.9		66.7	16.7	16.7		9.6	86.3	4.1		61.5	0	38.5		
Total %	0.5	46.2	6.3	53	1.1	0.3	0.3	1.6	3.7	33.2	1.6	38.5	4.2	0	2.6	6.9	

	Remington Southbound				Catholic Center Driveway Westbound				Remington Northbound				Danvill Street Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	0	19	2	21	0	0	0	0	0	16	1	17	0	0	0	0	38
05:15 PM	0	17	5	22	0	0	0	0	4	16	0	20	4	0	1	5	47
05:30 PM	1	20	2	23	1	0	0	1	4	15	0	19	3	0	0	3	46
05:45 PM	0	35	6	41	0	0	0	0	3	17	2	22	3	0	2	5	68
Total Volume	1	91	15	107	1	0	0	1	11	64	3	78	10	0	3	13	199
% App. Total	0.9	85	14		100	0	0		14.1	82.1	3.8		76.9	0	23.1		
PHF	.250	.650	.625	.652	.250	.000	.000	.250	.688	.941	.375	.886	.625	.000	.375	.650	.732

City of Irvine
N/S: Remington
E/W: Danvill Street
Weather: Clear

File Name : 01_IRV_Rem_Dan PM
Site Code : 00324491
Start Date : 5/21/2024
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Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	05:00 PM				04:00 PM				05:00 PM				04:00 PM			
+0 mins.	0	19	2	21	0	0	0	0	0	16	1	17	3	0	1	4
+15 mins.	0	17	5	22	0	0	0	0	4	16	0	20	1	0	1	2
+30 mins.	1	20	2	23	3	0	0	3	4	15	0	19	0	0	2	2
+45 mins.	0	35	6	41	0	1	1	2	3	17	2	22	2	0	3	5
Total Volume	1	91	15	107	3	1	1	5	11	64	3	78	6	0	7	13
% App. Total	0.9	85	14		60	20	20		14.1	82.1	3.8		46.2	0	53.8	
PHF	.250	.650	.625	.652	.250	.250	.250	.417	.688	.941	.375	.886	.500	.000	.583	.650

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City of Irvine
N/S: Remington
E/W: Roosevelt
Weather: Clear

File Name : 02_IRV_Rem_Roo AM
Site Code : 00324491
Start Date : 5/21/2024
Page No : 1

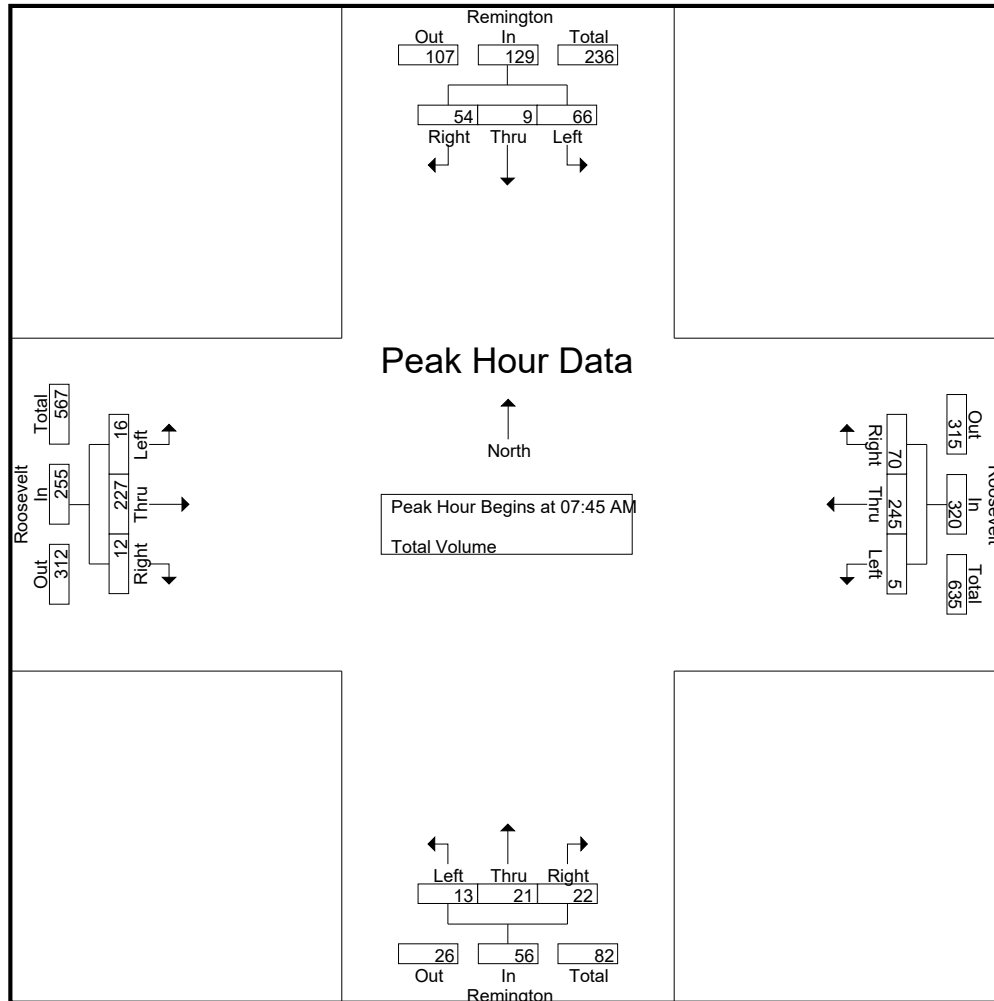
Groups Printed- Total Volume

	Remington Southbound				Roosevelt Westbound				Remington Northbound				Roosevelt Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
07:00 AM	3	0	4	7	1	19	4	24	2	2	0	4	1	7	1	9	44
07:15 AM	6	1	3	10	3	17	6	26	3	3	4	10	3	19	0	22	68
07:30 AM	8	0	2	10	1	43	7	51	4	9	6	19	5	29	1	35	115
07:45 AM	12	0	17	29	2	67	23	92	4	12	5	21	5	34	2	41	183
Total	29	1	26	56	7	146	40	193	13	26	15	54	14	89	4	107	410
08:00 AM	24	3	18	45	1	74	38	113	1	5	7	13	7	47	4	58	229
08:15 AM	25	3	15	43	1	77	7	85	4	0	6	10	3	78	2	83	221
08:30 AM	5	3	4	12	1	27	2	30	4	4	4	12	1	68	4	73	127
08:45 AM	7	0	5	12	1	45	2	48	3	1	9	13	1	49	5	55	128
Total	61	9	42	112	4	223	49	276	12	10	26	48	12	242	15	269	705
Grand Total	90	10	68	168	11	369	89	469	25	36	41	102	26	331	19	376	1115
Apprch %	53.6	6	40.5		2.3	78.7	19		24.5	35.3	40.2		6.9	88	5.1		
Total %	8.1	0.9	6.1	15.1	1	33.1	8	42.1	2.2	3.2	3.7	9.1	2.3	29.7	1.7	33.7	

	Remington Southbound				Roosevelt Westbound				Remington Northbound				Roosevelt Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 07:45 AM																	
07:45 AM	12	0	17	29	2	67	23	92	4	12	5	21	5	34	2	41	183
08:00 AM	24	3	18	45	1	74	38	113	1	5	7	13	7	47	4	58	229
08:15 AM	25	3	15	43	1	77	7	85	4	0	6	10	3	78	2	83	221
08:30 AM	5	3	4	12	1	27	2	30	4	4	4	12	1	68	4	73	127
Total Volume	66	9	54	129	5	245	70	320	13	21	22	56	16	227	12	255	760
% App. Total	51.2	7	41.9		1.6	76.6	21.9		23.2	37.5	39.3		6.3	89	4.7		
PHF	.660	.750	.750	.717	.625	.795	.461	.708	.813	.438	.786	.667	.571	.728	.750	.768	.830

City of Irvine
N/S: Remington
E/W: Roosevelt
Weather: Clear

File Name : 02_IRV_Rem_Roo AM
Site Code : 00324491
Start Date : 5/21/2024
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Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1

Peak Hour for Each Approach Begins at:

	07:45 AM				07:30 AM				07:15 AM				08:00 AM			
+0 mins.	12	0	17	29	1	43	7	51	3	3	4	10	7	47	4	58
+15 mins.	24	3	18	45	2	67	23	92	4	9	6	19	3	78	2	83
+30 mins.	25	3	15	43	1	74	38	113	4	12	5	21	1	68	4	73
+45 mins.	5	3	4	12	1	77	7	85	1	5	7	13	1	49	5	55
Total Volume	66	9	54	129	5	261	75	341	12	29	22	63	12	242	15	269
% App. Total	51.2	7	41.9		1.5	76.5	22		19	46	34.9		4.5	90	5.6	
PHF	.660	.750	.750	.717	.625	.847	.493	.754	.750	.604	.786	.750	.429	.776	.750	.810

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City of Irvine
N/S: Remington
E/W: Roosevelt
Weather: Clear

File Name : 02_IRV_Rem_Roo PM
Site Code : 00324491
Start Date : 5/21/2024
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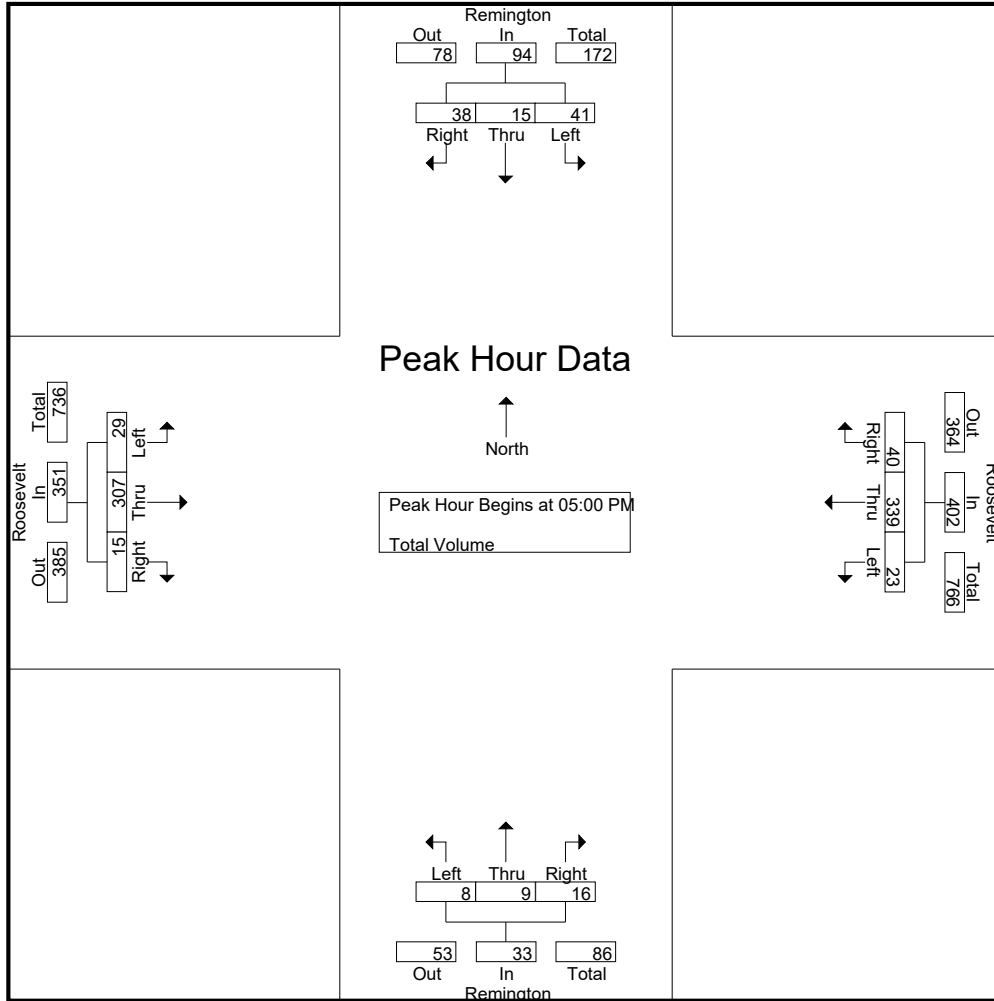
Groups Printed- Total Volume

	Remington Southbound				Roosevelt Westbound				Remington Northbound				Roosevelt Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	15	3	7	25	6	74	10	90	3	4	3	10	11	70	6	87	212
04:15 PM	12	5	4	21	4	63	6	73	2	2	1	5	3	45	3	51	150
04:30 PM	9	3	5	17	3	62	8	73	1	4	3	8	4	51	6	61	159
04:45 PM	16	3	13	32	2	62	9	73	4	0	1	5	7	62	8	77	187
Total	52	14	29	95	15	261	33	309	10	10	8	28	25	228	23	276	708
05:00 PM	5	3	10	18	6	77	5	88	3	5	6	14	7	67	2	76	196
05:15 PM	9	4	5	18	7	76	12	95	2	1	3	6	5	101	6	112	231
05:30 PM	9	3	8	20	6	116	15	137	2	1	4	7	4	62	6	72	236
05:45 PM	18	5	15	38	4	70	8	82	1	2	3	6	13	77	1	91	217
Total	41	15	38	94	23	339	40	402	8	9	16	33	29	307	15	351	880
Grand Total	93	29	67	189	38	600	73	711	18	19	24	61	54	535	38	627	1588
Apprch %	49.2	15.3	35.4		5.3	84.4	10.3		29.5	31.1	39.3		8.6	85.3	6.1		
Total %	5.9	1.8	4.2	11.9	2.4	37.8	4.6	44.8	1.1	1.2	1.5	3.8	3.4	33.7	2.4	39.5	

	Remington Southbound				Roosevelt Westbound				Remington Northbound				Roosevelt Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:00 PM																	
05:00 PM	5	3	10	18	6	77	5	88	3	5	6	14	7	67	2	76	196
05:15 PM	9	4	5	18	7	76	12	95	2	1	3	6	5	101	6	112	231
05:30 PM	9	3	8	20	6	116	15	137	2	1	4	7	4	62	6	72	236
05:45 PM	18	5	15	38	4	70	8	82	1	2	3	6	13	77	1	91	217
Total Volume	41	15	38	94	23	339	40	402	8	9	16	33	29	307	15	351	880
% App. Total	43.6	16	40.4		5.7	84.3	10		24.2	27.3	48.5		8.3	87.5	4.3		
PHF	.569	.750	.633	.618	.821	.731	.667	.734	.667	.450	.667	.589	.558	.760	.625	.783	.932

City of Irvine
N/S: Remington
E/W: Roosevelt
Weather: Clear

File Name : 02_IRV_Rem_Roo PM
Site Code : 00324491
Start Date : 5/21/2024
Page No : 2



Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1
Peak Hour for Each Approach Begins at:

	04:00 PM				05:00 PM				04:30 PM				05:00 PM			
+0 mins.	15	3	7	25	6	77	5	88	1	4	3	8	7	67	2	76
+15 mins.	12	5	4	21	7	76	12	95	4	0	1	5	5	101	6	112
+30 mins.	9	3	5	17	6	116	15	137	3	5	6	14	4	62	6	72
+45 mins.	16	3	13	32	4	70	8	82	2	1	3	6	13	77	1	91
Total Volume	52	14	29	95	23	339	40	402	10	10	13	33	29	307	15	351
% App. Total	54.7	14.7	30.5		5.7	84.3	10		30.3	30.3	39.4		8.3	87.5	4.3	
PHF	.813	.700	.558	.742	.821	.731	.667	.734	.625	.500	.542	.589	.558	.760	.625	.783

Location: Irvine
N/S: Jeffrey Road
E/W: Trabuco Road



ITAM: 285
Date: 2/27/2024
Day: Tuesday

		Jeffrey Road Southbound			Trabuco Road Westbound			Jeffrey Road Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		4	172	12	33	16	4	7	85	13	19	14	11	390
7:15 AM		6	273	9	44	22	13	5	106	24	19	26	18	565
7:30 AM		8	308	22	65	30	11	4	117	28	25	31	29	678
7:45 AM		31	429	52	60	82	27	17	182	27	31	34	20	992
8:00 AM		61	346	80	83	110	35	17	167	51	51	46	33	1080
8:15 AM		48	424	63	69	85	23	15	204	48	34	45	29	1087
8:30 AM		28	351	51	78	86	12	21	168	40	33	45	22	935
8:45 AM		17	385	45	90	58	15	16	167	35	21	44	23	916
TOTAL VOLUMES:		203	2688	334	522	489	140	102	1196	266	233	285	185	6643

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	168	1550	246	290	363	97	70	721	166	149	170	104	4094

PEAK HR FACTOR:	0.918	0.822	0.896	0.813	0.942
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		Jeffrey Road Southbound			Trabuco Road Westbound			Jeffrey Road Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		24	168	24	61	89	24	22	382	64	67	61	22	1008
4:15 PM		32	203	23	61	57	21	31	370	55	60	67	27	1007
4:30 PM		22	151	26	73	83	36	36	401	74	53	60	21	1036
4:45 PM		24	254	25	52	52	25	19	437	79	51	41	20	1079
5:00 PM		18	152	24	62	78	28	34	386	85	64	90	23	1044
5:15 PM		21	242	20	64	62	28	22	472	82	62	52	26	1153
5:30 PM		24	175	32	64	62	24	18	421	99	81	84	24	1108
5:45 PM		30	212	31	61	52	26	26	463	96	63	72	33	1165
6:00 PM		14	166	16	50	58	28	24	412	101	87	102	16	1074
6:15 PM		16	203	24	54	41	10	17	415	89	64	59	21	1013
TOTAL VOLUMES:		225	1926	245	602	634	250	249	4159	824	652	688	233	10687

PM Peak Hr Begins at: 515 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	89	795	99	239	234	106	90	1768	378	293	310	99	4500

PEAK HR FACTOR:	0.868	0.940	0.956	0.856	0.966
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Location: Irvine
N/S: Jeffrey Road
E/W: Trabuco Road



ITAM: 285
Date: 2/29/2024
Day: Thursday

		Jeffrey Road Southbound			Trabuco Road Westbound			Jeffrey Road Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		4	147	7	37	12	12	8	60	14	15	15	12	343
7:15 AM		11	280	7	34	14	10	6	100	21	19	17	20	539
7:30 AM		5	311	22	75	37	9	8	94	29	30	34	19	673
7:45 AM		14	444	45	65	55	19	18	184	29	29	35	30	967
8:00 AM		20	310	75	91	93	13	18	155	31	53	73	31	963
8:15 AM		43	462	57	60	62	13	17	199	49	46	42	34	1084
8:30 AM		60	371	39	100	59	25	19	183	48	33	51	28	1016
8:45 AM		38	382	34	76	41	24	17	212	42	23	28	26	943
TOTAL VOLUMES:		195	2707	286	538	373	125	111	1187	263	248	295	200	6528

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	137	1587	216	316	269	70	72	721	157	161	201	123	4030

PEAK HR FACTOR:	0.863	0.831	0.896	0.772	0.929
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		Jeffrey Road Southbound			Trabuco Road Westbound			Jeffrey Road Northbound			Trabuco Road Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		18	159	15	71	67	22	28	419	63	41	45	16	964
4:15 PM		24	250	17	61	54	21	33	472	60	54	63	18	1127
4:30 PM		19	195	19	74	61	34	36	413	63	58	63	21	1056
4:45 PM		20	272	34	64	61	22	37	514	73	49	54	12	1212
5:00 PM		22	202	26	63	70	28	28	461	75	59	74	42	1150
5:15 PM		25	242	20	55	49	17	30	492	85	47	48	20	1130
5:30 PM		22	204	26	71	79	37	26	441	102	82	86	28	1204
5:45 PM		27	257	35	62	67	27	29	496	88	64	75	31	1258
6:00 PM		18	157	21	61	67	26	27	403	87	72	76	18	1033
6:15 PM		27	183	15	38	39	13	10	398	70	63	73	20	949
TOTAL VOLUMES:		222	2121	228	620	614	247	284	4509	766	589	657	226	11083

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	96	905	107	251	265	109	113	1890	350	252	283	121	4742

PEAK HR FACTOR:	0.868	0.836	0.960	0.837	0.942
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Location: Irvine
N/S: Jeffrey Road
E/W: Roosevelt



ITAM: 286
Date: 5/21/2024
Day: Tuesday

		Jeffrey Road Southbound			Roosevelt Westbound			Jeffrey Road Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		3	198	3	56	12	10	22	73	22	4	4	35	442
7:15 AM		1	314	6	73	10	13	19	123	39	6	5	57	666
7:30 AM		5	326	14	117	25	18	32	143	45	7	8	65	805
7:45 AM		8	462	30	103	33	29	50	145	43	13	13	84	1013
8:00 AM		10	388	20	143	80	86	43	146	49	24	23	81	1093
8:15 AM		11	511	22	123	59	81	32	155	48	12	31	78	1163
8:30 AM		11	528	17	111	18	15	35	119	50	9	33	68	1014
8:45 AM		19	458	36	89	20	13	35	176	48	10	10	72	986
TOTAL VOLUMES:		68	3185	148	815	257	265	268	1080	344	85	127	540	7182

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	40	1889	89	480	190	211	160	565	190	58	100	311	4283

PEAK HR FACTOR:	0.907	0.713	0.961	0.916	0.921
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		Jeffrey Road Southbound			Roosevelt Westbound			Jeffrey Road Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		17	196	38	73	38	32	86	389	104	47	54	87	1161
4:15 PM		28	237	51	46	30	7	91	475	93	28	33	44	1163
4:30 PM		13	217	27	58	34	22	93	434	74	47	26	77	1122
4:45 PM		10	275	79	38	28	19	88	515	113	29	25	61	1280
5:00 PM		12	233	46	66	31	22	93	437	110	64	39	95	1248
5:15 PM		15	276	64	41	25	13	127	605	124	48	33	55	1426
5:30 PM		17	201	51	61	47	30	95	473	118	80	51	108	1332
5:45 PM		8	252	56	51	35	20	112	579	152	41	19	76	1401
6:00 PM		13	178	23	71	35	18	75	452	105	67	49	95	1181
6:15 PM		18	221	46	41	20	24	83	537	129	27	32	75	1253
TOTAL VOLUMES:		151	2286	481	546	323	207	943	4896	1122	478	361	773	12567

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	52	962	217	219	138	85	427	2094	504	233	142	334	5407

PEAK HR FACTOR:	0.867	0.801	0.883	0.742	0.948
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Location: Irvine
N/S: Jeffrey Road
E/W: Roosevelt



ITAM: 286
Date: 5/23/2024
Day: Thursday

		Jeffrey Road Southbound			Roosevelt Westbound			Jeffrey Road Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
7:00 AM		3	175	4	57	12	9	15	74	24	5	4	34	416
7:15 AM		3	322	4	63	18	13	22	112	33	5	1	35	631
7:30 AM		7	301	9	112	17	18	30	132	57	14	11	81	789
7:45 AM		9	434	32	93	34	19	44	162	51	14	12	86	990
8:00 AM		4	375	25	116	71	35	26	159	48	21	19	117	1016
8:15 AM		13	459	24	123	51	35	30	170	55	13	35	66	1074
8:30 AM		14	428	20	139	22	93	47	134	65	10	34	74	1080
8:45 AM		9	424	29	100	26	64	43	157	38	8	12	68	978
TOTAL VOLUMES:		62	2918	147	803	251	286	257	1100	371	90	128	561	6974

AM Peak Hr Begins at: 745 AM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	40	1696	101	471	178	182	147	625	219	58	100	343	4160

PEAK HR FACTOR:	0.926	0.818	0.964	0.798	0.963
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		Jeffrey Road Southbound			Roosevelt Westbound			Jeffrey Road Northbound			Roosevelt Eastbound			TOTAL
		SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	
4:00 PM		17	231	34	60	25	23	100	348	91	31	46	73	1079
4:15 PM		11	258	47	36	16	18	98	430	99	29	20	52	1114
4:30 PM		15	228	37	56	25	14	95	405	74	56	29	65	1099
4:45 PM		12	271	55	51	26	19	92	506	94	35	16	62	1239
5:00 PM		19	207	39	57	24	16	80	432	121	69	30	81	1175
5:15 PM		16	269	62	52	31	28	99	556	128	39	31	67	1378
5:30 PM		16	208	48	59	36	15	75	464	110	72	45	104	1252
5:45 PM		14	251	56	48	32	27	97	538	108	32	27	83	1313
6:00 PM		12	196	28	58	20	27	75	407	105	72	64	102	1166
6:15 PM		19	224	37	40	23	14	79	463	99	41	28	79	1146
TOTAL VOLUMES:		151	2343	443	517	258	201	890	4549	1029	476	336	768	11961

PM Peak Hr Begins at: 500 PM

PEAK VOLUMES:	SL	ST	SR	WL	WT	WR	NL	NT	NR	EL	ET	ER	TOTAL
	65	935	205	216	123	86	351	1990	467	212	133	335	5118

PEAK HR FACTOR:	0.868	0.957	0.897	0.769	0.929
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City of Irvine
 Jeffrey Road
 B/ Trabuco Road - Roosevelt
 24 Hour Directional Volume Count

Counts Unlimited, Inc
 PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

IRV006
 Site Code: 003-24491

Start Time	5/22/2024 Wed	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		38	252			21	228				
12:15		25	256			24	267				
12:30		37	248			13	251				
12:45		22	300	122	1056	23	298	81	1044	203	2100
01:00		15	259			11	277				
01:15		14	290			9	238				
01:30		14	302			9	330				
01:45		12	278	55	1129	8	285	37	1130	92	2259
02:00		19	264			8	301				
02:15		12	258			5	270				
02:30		6	348			8	319				
02:45		4	312	41	1182	10	324	31	1214	72	2396
03:00		5	464			2	288				
03:15		6	414			7	333				
03:30		5	368			9	267				
03:45		12	419	28	1665	15	296	33	1184	61	2849
04:00		6	477			9	243				
04:15		7	526			22	286				
04:30		18	462			30	272				
04:45		26	517	57	1982	24	338	85	1139	142	3121
05:00		15	574			37	256				
05:15		47	534			48	284				
05:30		34	532			72	232				
05:45		49	633	145	2273	91	286	248	1058	393	3331
06:00		44	481			121	236				
06:15		59	470			112	272				
06:30		76	383			124	233				
06:45		91	388	270	1722	157	271	514	1012	784	2734
07:00		87	336			197	213				
07:15		133	228			279	207				
07:30		144	276			319	198				
07:45		194	234	558	1074	471	184	1266	802	1824	1876
08:00		182	238			399	171				
08:15		222	218			459	175				
08:30		264	228			415	139				
08:45		254	217	922	901	484	130	1757	615	2679	1516
09:00		182	199			352	116				
09:15		157	155			394	112				
09:30		186	140			346	94				
09:45		176	143	701	637	300	97	1392	419	2093	1056
10:00		145	108			259	116				
10:15		180	101			246	66				
10:30		194	88			303	49				
10:45		188	61	707	358	272	35	1080	266	1787	624
11:00		226	61			287	39				
11:15		212	68			276	34				
11:30		204	37			299	30				
11:45		245	38	887	204	261	32	1123	135	2010	339
Total		4493	14183	4493	14183	7647	10018	7647	10018	12140	24201
Combined Total		18676		18676		17665		17665		36341	
AM Peak	-	08:00	-	-	-	08:00	-	-	-	-	-
Vol.	-	922	-	-	-	1757	-	-	-	-	-
P.H.F.		0.873				0.908					
PM Peak	-	-	05:00	-	-	-	02:30	-	-	-	-
Vol.	-	-	2273	-	-	-	1264	-	-	-	-
P.H.F.			0.898				0.949				
Percentage		24.1%	75.9%			43.3%	56.7%				
ADT/AADT		ADT 36,341	AADT 36,341								

Counts Unlimited, Inc

City of Irvine
Remington
B/ Trabuco Road - Roosevelt
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

IRV007
Site Code: 003-24491

Start Time	5/22/2024 Wed	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	3			2	9				
12:15		1	13			0	16				
12:30		0	6			0	21				
12:45		2	15	3	37	2	16	4	62	7	99
01:00		0	31			0	35				
01:15		0	20			0	35				
01:30		0	42			0	27				
01:45		0	20	0	113	0	46	0	143	0	256
02:00		0	16			0	13				
02:15		0	8			0	18				
02:30		0	8			0	17				
02:45		0	9	0	41	0	34	0	82	0	123
03:00		0	16			0	20				
03:15		0	15			0	35				
03:30		0	12			2	24				
03:45		0	18	0	61	1	29	3	108	3	169
04:00		0	19			1	28				
04:15		1	16			0	21				
04:30		0	24			0	20				
04:45		1	15	2	74	3	26	4	95	6	169
05:00		2	38			2	32				
05:15		4	27			2	19				
05:30		0	19			0	34				
05:45		3	27	9	111	2	33	6	118	15	229
06:00		2	24			2	31				
06:15		3	23			2	25				
06:30		4	15			5	30				
06:45		5	13	14	75	1	22	10	108	24	183
07:00		7	7			6	15				
07:15		11	11			8	13				
07:30		18	12			16	21				
07:45		38	17	74	47	31	20	61	69	135	116
08:00		61	12			52	14				
08:15		14	9			51	15				
08:30		8	22			14	20				
08:45		14	8	97	51	25	20	142	69	239	120
09:00		14	18			16	21				
09:15		9	13			15	15				
09:30		9	12			14	10				
09:45		8	9	40	52	20	6	65	52	105	104
10:00		15	3			14	4				
10:15		14	3			15	2				
10:30		6	3			10	4				
10:45		11	4	46	13	20	8	59	18	105	31
11:00		10	3			10	4				
11:15		13	3			11	7				
11:30		17	0			19	3				
11:45		8	1	48	7	10	1	50	15	98	22
Total		333	682	333	682	404	939	404	939	737	1621
Combined Total		1015		1015		1343		1343		2358	
AM Peak	-	07:30	-	-	-	07:30	-	-	-	-	-
Vol.	-	131	-	-	-	150	-	-	-	-	-
P.H.F.		0.537				0.721					
PM Peak	-	-	01:00	-	-	-	01:00	-	-	-	-
Vol.	-	-	113	-	-	-	143	-	-	-	-
P.H.F.			0.673				0.777				
Percentage		32.8%	67.2%			30.1%	69.9%				
ADT/AADT		ADT 2,358	AADT 2,358								

Counts Unlimited, Inc

City of Irvine
Roosevelt
B/ Remington - Jeffrey Road
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

IRV003
Site Code: 003-24491

Start Time	5/22/2024 Wed	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		10	35			3	43				
12:15		3	47			5	36				
12:30		3	42			3	48				
12:45		5	56	21	180	1	48	12	175	33	355
01:00		2	54			4	47				
01:15		2	55			1	49				
01:30		4	66			1	62				
01:45		1	69	9	244	2	50	8	208	17	452
02:00		0	44			0	71				
02:15		2	84			2	52				
02:30		1	69			0	54				
02:45		3	81	6	278	0	66	2	243	8	521
03:00		0	60			0	47				
03:15		1	102			2	76				
03:30		4	76			0	121				
03:45		3	100	8	338	0	103	2	347	10	685
04:00		0	89			0	102				
04:15		7	95			1	82				
04:30		9	78			0	97				
04:45		30	69	46	331	2	80	3	361	49	692
05:00		20	88			4	103				
05:15		14	91			29	102				
05:30		10	105			5	108				
05:45		7	89	51	373	4	108	42	421	93	794
06:00		16	97			6	126				
06:15		14	112			8	94				
06:30		25	79			10	88				
06:45		22	80	77	368	17	80	41	388	118	756
07:00		24	55			11	82				
07:15		49	48			26	43				
07:30		58	47			43	60				
07:45		76	67	207	217	64	40	144	225	351	442
08:00		91	46			119	60				
08:15		124	41			98	44				
08:30		94	56			38	59				
08:45		72	40	381	183	43	44	298	207	679	390
09:00		61	49			34	48				
09:15		48	52			24	27				
09:30		46	29			30	37				
09:45		58	26	213	156	27	36	115	148	328	304
10:00		42	14			24	33				
10:15		34	9			35	22				
10:30		38	16			25	14				
10:45		41	20	155	59	33	10	117	79	272	138
11:00		52	10			31	9				
11:15		39	7			44	5				
11:30		48	1			36	5				
11:45		40	8	179	26	37	7	148	26	327	52
Total		1353	2753	1353	2753	932	2828	932	2828	2285	5581
Combined Total		4106		4106		3760		3760		7866	
AM Peak	-	07:45	-	-	-	07:30	-	-	-	-	-
Vol.	-	385	-	-	-	324	-	-	-	-	-
P.H.F.		0.776				0.681					
PM Peak	-	-	05:30	-	-	-	05:15	-	-	-	-
Vol.	-	-	403	-	-	-	444	-	-	-	-
P.H.F.			0.900				0.881				
Percentage		33.0%	67.0%			24.8%	75.2%				
ADT/AADT		ADT 7,866	AADT 7,866								

Counts Unlimited, Inc

City of Irvine
Roosevelt
B/ Yale Avenue - Remington
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

IRV002
Site Code: 003-24491

Start Time	5/22/2024 Wed	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		8	29			1	36				
12:15		2	41			1	40				
12:30		2	33			2	38				
12:45		3	42	15	145	1	33	5	147	20	292
01:00		2	52			2	48				
01:15		1	37			1	52				
01:30		1	59			0	51				
01:45		2	42	6	190	2	44	5	195	11	385
02:00		0	42			0	61				
02:15		2	75			0	46				
02:30		1	58			0	54				
02:45		2	74	5	249	0	66	0	227	5	476
03:00		0	59			0	45				
03:15		0	79			0	74				
03:30		1	66			1	124				
03:45		1	97	2	301	0	102	1	345	3	646
04:00		0	76			0	92				
04:15		5	88			0	73				
04:30		7	82			0	80				
04:45		15	63	27	309	2	74	2	319	29	628
05:00		13	90			2	95				
05:15		4	105			23	78				
05:30		6	96			3	101				
05:45		3	98	26	389	7	95	35	369	61	758
06:00		5	97			8	116				
06:15		5	98			7	74				
06:30		6	84			11	74				
06:45		15	66	31	345	15	72	41	336	72	681
07:00		14	53			8	68				
07:15		21	40			26	34				
07:30		28	41			47	56				
07:45		50	67	113	201	88	34	169	192	282	393
08:00		66	38			110	50				
08:15		94	47			123	41				
08:30		68	43			40	45				
08:45		48	37	276	165	52	38	325	174	601	339
09:00		34	44			42	43				
09:15		30	47			33	18				
09:30		29	20			31	24				
09:45		38	17	131	128	34	28	140	113	271	241
10:00		32	13			18	24				
10:15		30	10			33	17				
10:30		23	8			20	6				
10:45		21	17	106	48	31	7	102	54	208	102
11:00		30	9			28	6				
11:15		20	8			41	5				
11:30		33	4			29	5				
11:45		30	8	113	29	30	2	128	18	241	47
Total		851	2499	851	2499	953	2489	953	2489	1804	4988
Combined Total		3350		3350		3442		3442		6792	
AM Peak	-	07:45	-	-	-	07:30	-	-	-	-	-
Vol.	-	278	-	-	-	368	-	-	-	-	-
P.H.F.		0.739				0.748					
PM Peak	-	-	05:15	-	-	-	03:15	-	-	-	-
Vol.	-	-	396	-	-	-	392	-	-	-	-
P.H.F.			0.943				0.790				
Percentage		25.4%	74.6%			27.7%	72.3%				
ADT/AADT		ADT 6,792		AADT 6,792							

Counts Unlimited, Inc

City of Irvine
 Trabuco Road
 B/ Remington - Jeffrey Road
 24 Hour Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

IRV005
 Site Code: 003-24491

Start Time	5/22/2024 Wed	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		4	49			7	68				
12:15		1	44			8	89				
12:30		2	62			9	85				
12:45		3	78	10	233	6	66	30	308	40	541
01:00		1	80			6	85				
01:15		1	96			1	104				
01:30		1	88			6	114				
01:45		0	84	3	348	1	76	14	379	17	727
02:00		0	71			2	96				
02:15		3	116			2	100				
02:30		0	107			1	109				
02:45		2	136	5	430	4	86	9	391	14	821
03:00		0	125			3	110				
03:15		0	146			7	92				
03:30		1	114			1	110				
03:45		0	138	1	523	2	112	13	424	14	947
04:00		0	136			2	135				
04:15		2	94			2	160				
04:30		0	112			4	216				
04:45		1	102	3	444	3	212	11	723	14	1167
05:00		2	144			5	234				
05:15		3	110			4	214				
05:30		9	140			11	259				
05:45		8	118	22	512	17	272	37	979	59	1491
06:00		7	113			17	276				
06:15		4	88			19	224				
06:30		20	76			32	188				
06:45		20	58	51	335	30	149	98	837	149	1172
07:00		16	64			34	128				
07:15		36	60			50	94				
07:30		62	68			84	73				
07:45		112	92	226	284	84	70	252	365	478	649
08:00		147	50			113	80				
08:15		116	43			108	63				
08:30		84	35			110	58				
08:45		99	32	446	160	70	44	401	245	847	405
09:00		68	47			88	52				
09:15		51	26			62	51				
09:30		56	20			74	36				
09:45		78	16	253	109	68	35	292	174	545	283
10:00		52	14			60	30				
10:15		68	16			64	23				
10:30		47	16			70	14				
10:45		61	14	228	60	70	10	264	77	492	137
11:00		59	6			70	9				
11:15		55	9			68	10				
11:30		70	7			81	11				
11:45		53	3	237	25	80	10	299	40	536	65
Total		1485	3463	1485	3463	1720	4942	1720	4942	3205	8405
Combined Total		4948		4948		6662		6662		11610	
AM Peak	-	07:45	-	-	-	07:45	-	-	-	-	-
Vol.	-	459	-	-	-	415	-	-	-	-	-
P.H.F.		0.781				0.918					
PM Peak	-	-	03:15	-	-	-	05:30	-	-	-	-
Vol.	-	-	534	-	-	-	1031	-	-	-	-
P.H.F.			0.914				0.934				
Percentage		30.0%	70.0%			25.8%	74.2%				
ADT/AADT		ADT 11,610	AADT 11,610								

Counts Unlimited, Inc

City of Irvine
 Trabuco Road
 B/ Yale Avenue - Remington
 24 Hour Directional Volume Count

PO Box 1178
 Corona, CA 92878
 Phone: 951-268-6268
 email: counts@countsunlimited.com

IRV004
 Site Code: 003-24491

Start Time	5/22/2024 Wed	Eastbound		Hour Totals		Westbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		0	48			7	65				
12:15		1	46			10	72				
12:30		0	50			8	72				
12:45		2	60	3	204	7	70	32	279	35	483
01:00		0	57			3	89				
01:15		0	80			3	83				
01:30		1	76			5	110				
01:45		0	79	1	292	2	74	13	356	14	648
02:00		1	72			2	100				
02:15		1	98			2	99				
02:30		1	98			2	89				
02:45		2	115	5	383	1	96	7	384	12	767
03:00		0	110			2	100				
03:15		1	139			2	102				
03:30		2	88			1	111				
03:45		1	124	4	461	1	110	6	423	10	884
04:00		0	122			2	121				
04:15		3	97			1	178				
04:30		2	102			1	182				
04:45		3	115	8	436	6	212	10	693	18	1129
05:00		5	112			5	224				
05:15		8	125			4	191				
05:30		11	104			8	272				
05:45		12	124	36	465	14	265	31	952	67	1417
06:00		7	105			13	260				
06:15		12	72			22	218				
06:30		24	70			21	195				
06:45		26	50	69	297	28	126	84	799	153	1096
07:00		25	60			30	120				
07:15		44	58			39	86				
07:30		52	56			56	75				
07:45		132	75	253	249	80	84	205	365	458	614
08:00		133	47			96	78				
08:15		114	37			84	60				
08:30		78	31			105	68				
08:45		102	25	427	140	70	50	355	256	782	396
09:00		72	42			82	60				
09:15		48	33			58	70				
09:30		49	15			65	40				
09:45		69	13	238	103	60	33	265	203	503	306
10:00		58	7			59	34				
10:15		57	15			60	26				
10:30		53	15			62	20				
10:45		46	12	214	49	56	14	237	94	451	143
11:00		56	5			56	12				
11:15		54	5			59	15				
11:30		62	3			68	12				
11:45		48	4	220	17	70	13	253	52	473	69
Total		1478	3096	1478	3096	1498	4856	1498	4856	2976	7952
Combined Total		4574		4574		6354		6354		10928	
AM Peak	-	07:45	-	-	-	07:45	-	-	-	-	-
Vol.	-	457	-	-	-	365	-	-	-	-	-
P.H.F.		0.859				0.869					
PM Peak	-	-	03:15	-	-	-	05:30	-	-	-	-
Vol.	-	-	473	-	-	-	1015	-	-	-	-
P.H.F.			0.851				0.933				
Percentage		32.3%	67.7%			23.6%	76.4%				
ADT/AADT		ADT 10,928	AADT 10,928								

Counts Unlimited, Inc

City of Irvine
Yale Avenue
B/ Trabuco Road - Roosevelt
24 Hour Directional Volume Count

PO Box 1178
Corona, CA 92878
Phone: 951-268-6268
email: counts@countsunlimited.com

IRV001
Site Code: 003-24491

Start Time	5/22/2024 Wed	Northbound		Hour Totals		Southbound		Hour Totals		Combined Totals	
		Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon	Morning	Afternoon
12:00		8	90			9	60				
12:15		2	98			3	68				
12:30		4	82			4	72				
12:45		3	75	17	345	4	70	20	270	37	615
01:00		3	125			7	79				
01:15		4	136			7	92				
01:30		4	122			1	106				
01:45		3	100	14	483	3	104	18	381	32	864
02:00		2	88			2	62				
02:15		3	108			2	81				
02:30		2	124			1	80				
02:45		1	114	8	434	2	128	7	351	15	785
03:00		1	106			0	112				
03:15		4	123			2	102				
03:30		5	145			1	116				
03:45		2	144	12	518	2	114	5	444	17	962
04:00		2	172			1	150				
04:15		6	150			2	132				
04:30		6	135			3	102				
04:45		3	176	17	633	7	122	13	506	30	1139
05:00		10	168			2	142				
05:15		17	182			2	171				
05:30		18	206			11	128				
05:45		12	196	57	752	8	150	23	591	80	1343
06:00		23	270			9	116				
06:15		17	148			15	122				
06:30		24	148			18	116				
06:45		50	110	114	676	22	94	64	448	178	1124
07:00		45	98			24	92				
07:15		68	85			31	99				
07:30		96	80			58	56				
07:45		150	94	359	357	127	94	240	341	599	698
08:00		158	113			188	44				
08:15		130	90			164	54				
08:30		98	70			72	62				
08:45		104	56	490	329	120	45	544	205	1034	534
09:00		120	64			88	44				
09:15		84	52			54	27				
09:30		72	35			64	23				
09:45		72	34	348	185	75	21	281	115	629	300
10:00		78	34			60	26				
10:15		80	18			67	21				
10:30		80	17			58	19				
10:45		106	12	344	81	50	20	235	86	579	167
11:00		78	9			53	13				
11:15		76	11			55	7				
11:30		84	14			60	6				
11:45		62	5	300	39	71	9	239	35	539	74
Total		2080	4832	2080	4832	1689	3773	1689	3773	3769	8605
Combined Total		6912		6912		5462		5462		12374	
AM Peak	-	07:45	-	-	-	07:45	-	-	-	-	-
Vol.	-	536	-	-	-	551	-	-	-	-	-
P.H.F.		0.848				0.733					
PM Peak	-	-	05:15	-	-	-	05:00	-	-	-	-
Vol.	-	-	854	-	-	-	591	-	-	-	-
P.H.F.			0.791				0.864				
Percentage		30.1%	69.9%			30.9%	69.1%				
ADT/AADT		ADT 12,374	AADT 12,374								

APPENDIX E

HCM WORKSHEETS

Intersection												
Int Delay, s/veh	479.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	32	290	36	49	477	67	14	82	38	95	73	95
Future Vol, veh/h	32	290	36	49	477	67	14	82	38	95	73	95
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	145	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	75	75	75	75	75	75	75	75	75
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	387	48	65	636	89	19	109	51	127	97	127
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	725	0	0	435	0	0	993	1352	217	1145	1331	363
Stage 1	-	-	-	-	-	-	496	496	-	811	811	-
Stage 2	-	-	-	-	-	-	497	856	-	333	520	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	873	-	-	1121	-	-	200	149	787	155	153	634
Stage 1	-	-	-	-	-	-	524	544	-	339	391	-
Stage 2	-	-	-	-	-	-	523	373	-	654	530	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	873	-	-	1121	-	-	45	133	787	~ 25	137	634
Mov Cap-2 Maneuver	-	-	-	-	-	-	45	133	-	~ 25	137	-
Stage 1	-	-	-	-	-	-	499	517	-	320	368	-
Stage 2	-	-	-	-	-	-	290	351	-	459	504	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.83			0.69			239.71			\$ 2330.73		
HCM LOS							F			F		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	137	873	-	-	1121	-	-	60				
HCM Lane V/C Ratio	1.3	0.049	-	-	0.058	-	-	5.878				
HCM Control Delay (s/veh)	239.7	9.3	-	-	8.4	-	-	\$ 2330.7				
HCM Lane LOS	F	A	-	-	A	-	-	F				
HCM 95th %tile Q(veh)	11.2	0.2	-	-	0.2	-	-	39.7				
Notes												
~: Volume exceeds capacity		\$: Delay exceeds 300s			+: Computation Not Defined				*: All major volume in platoon			

Intersection												
Int Delay, s/veh	6.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	491	45	41	350	63	12	36	40	45	22	49
Future Vol, veh/h	72	491	45	41	350	63	12	36	40	45	22	49
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	145	-	-	150	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	77	528	48	44	376	68	13	39	43	48	24	53

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	444	0	0	576	0	0	995	1239	288	937	1230	222
Stage 1	-	-	-	-	-	-	707	707	-	498	498	-
Stage 2	-	-	-	-	-	-	288	532	-	438	731	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	1112	-	-	993	-	-	199	174	708	220	176	782
Stage 1	-	-	-	-	-	-	392	436	-	522	542	-
Stage 2	-	-	-	-	-	-	695	524	-	567	425	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	993	-	-	143	155	708	141	157	782
Mov Cap-2 Maneuver	-	-	-	-	-	-	143	155	-	141	157	-
Stage 1	-	-	-	-	-	-	365	406	-	499	518	-
Stage 2	-	-	-	-	-	-	591	500	-	448	396	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1			0.79			30.15			39.99		
HCM LOS							D			E		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	236	1112	-	-	993	-	-	223
HCM Lane V/C Ratio	0.401	0.07	-	-	0.044	-	-	0.56
HCM Control Delay (s/veh)	30.1	8.5	-	-	8.8	-	-	40
HCM Lane LOS	D	A	-	-	A	-	-	E
HCM 95th %tile Q(veh)	1.8	0.2	-	-	0.1	-	-	3.1

Intersection												
Int Delay, s/veh	4.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	16	227	12	5	245	70	13	21	22	66	9	54
Future Vol, veh/h	16	227	12	5	245	70	13	21	22	66	9	54
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	19	273	14	6	295	84	16	25	27	80	11	65

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	380	0	0	288	0	0	625	704	273	632	634	295
Stage 1	-	-	-	-	-	-	312	312	-	307	307	-
Stage 2	-	-	-	-	-	-	313	392	-	325	327	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1179	-	-	1274	-	-	397	362	765	393	397	744
Stage 1	-	-	-	-	-	-	698	658	-	703	661	-
Stage 2	-	-	-	-	-	-	698	607	-	688	648	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1179	-	-	1274	-	-	345	354	765	345	388	744
Mov Cap-2 Maneuver	-	-	-	-	-	-	345	354	-	345	388	-
Stage 1	-	-	-	-	-	-	687	647	-	699	658	-
Stage 2	-	-	-	-	-	-	623	604	-	627	637	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.51			0.12			14.52			17.17		
HCM LOS							B			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	445	1179	-	-	1274	-	-	450
HCM Lane V/C Ratio	0.151	0.016	-	-	0.005	-	-	0.346
HCM Control Delay (s/veh)	14.5	8.1	-	-	7.8	-	-	17.2
HCM Lane LOS	B	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0	-	-	0	-	-	1.5

Intersection												
Int Delay, s/veh	3.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	29	307	15	23	339	40	8	9	16	41	15	38
Future Vol, veh/h	29	307	15	23	339	40	8	9	16	41	15	38
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	31	330	16	25	365	43	9	10	17	44	16	41

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	408	0	0	346	0	0	815	849	330	811	823	365
Stage 1	-	-	-	-	-	-	392	392	-	414	414	-
Stage 2	-	-	-	-	-	-	422	457	-	397	409	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1151	-	-	1213	-	-	296	298	711	298	309	680
Stage 1	-	-	-	-	-	-	632	606	-	616	593	-
Stage 2	-	-	-	-	-	-	609	568	-	628	596	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1151	-	-	1213	-	-	252	284	711	268	294	680
Mov Cap-2 Maneuver	-	-	-	-	-	-	252	284	-	268	294	-
Stage 1	-	-	-	-	-	-	615	590	-	603	581	-
Stage 2	-	-	-	-	-	-	546	556	-	587	580	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.68			0.46			15.34			18.76		
HCM LOS							C			C		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	384	1151	-	-	1213	-	-	362
HCM Lane V/C Ratio	0.092	0.027	-	-	0.02	-	-	0.279
HCM Control Delay (s/veh)	15.3	8.2	-	-	8	-	-	18.8
HCM Lane LOS	C	A	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.3	0.1	-	-	0.1	-	-	1.1

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	35	164	5	5	111	53	11	26	52	64	21	17
Future Vol, veh/h	35	164	5	5	111	53	11	26	52	64	21	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	38	178	5	5	121	58	12	28	57	70	23	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	178	0	0	184	0	0	397	443	178	400	391	121
Stage 1	-	-	-	-	-	-	254	254	-	132	132	-
Stage 2	-	-	-	-	-	-	143	189	-	268	260	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1398	-	-	1391	-	-	563	509	865	560	544	931
Stage 1	-	-	-	-	-	-	750	697	-	872	787	-
Stage 2	-	-	-	-	-	-	860	744	-	737	693	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1398	-	-	1391	-	-	512	493	865	479	527	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	512	493	-	479	527	-
Stage 1	-	-	-	-	-	-	730	678	-	869	784	-
Stage 2	-	-	-	-	-	-	815	741	-	642	674	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.31			0.22			11.36			13.53		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	662	1398	-	-	1391	-	-	532				
HCM Lane V/C Ratio	0.146	0.027	-	-	0.004	-	-	0.208				
HCM Control Delay (s/veh)	11.4	7.6	-	-	7.6	-	-	13.5				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.8				

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	91	12	19	394	23	5	2	8	16	7	14
Future Vol, veh/h	8	91	12	19	394	23	5	2	8	16	7	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	98	13	20	424	25	5	2	9	17	8	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	111	0	0	583	604	98	581	592	424
Stage 1	-	-	-	-	-	-	115	115	-	465	465	-
Stage 2	-	-	-	-	-	-	468	489	-	116	128	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1112	-	-	1479	-	-	424	412	958	425	419	630
Stage 1	-	-	-	-	-	-	890	800	-	578	563	-
Stage 2	-	-	-	-	-	-	575	549	-	889	790	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	1479	-	-	397	403	958	410	410	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	397	403	-	410	410	-
Stage 1	-	-	-	-	-	-	883	794	-	570	555	-
Stage 2	-	-	-	-	-	-	546	542	-	871	784	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.6			0.33			11.39			13.32		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	579	1112	-	-	1479	-	-	473
HCM Lane V/C Ratio	0.028	0.008	-	-	0.014	-	-	0.084
HCM Control Delay (s/veh)	11.4	8.3	-	-	7.5	-	-	13.3
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	163	5	6	112	55	10	26	53	65	21	16
Future Vol, veh/h	34	163	5	6	112	55	10	26	53	65	21	16
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	177	5	7	122	60	11	28	58	71	23	17

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	182	0	0	183	0	0	397	446	177	400	391	122
Stage 1	-	-	-	-	-	-	251	251	-	135	135	-
Stage 2	-	-	-	-	-	-	146	195	-	265	257	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1394	-	-	1392	-	-	563	507	866	560	544	929
Stage 1	-	-	-	-	-	-	753	699	-	869	785	-
Stage 2	-	-	-	-	-	-	856	740	-	740	695	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1394	-	-	1392	-	-	513	492	866	479	527	929
Mov Cap-2 Maneuver	-	-	-	-	-	-	513	492	-	479	527	-
Stage 1	-	-	-	-	-	-	733	681	-	864	781	-
Stage 2	-	-	-	-	-	-	812	736	-	645	677	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.29			0.26			11.32			13.6		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	666	1394	-	-	1392	-	-	529
HCM Lane V/C Ratio	0.145	0.027	-	-	0.005	-	-	0.21
HCM Control Delay (s/veh)	11.3	7.7	-	-	7.6	-	-	13.6
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.8

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	93	11	19	394	23	5	2	8	16	7	14
Future Vol, veh/h	8	93	11	19	394	23	5	2	8	16	7	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	100	12	20	424	25	5	2	9	17	8	15
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	448	0	0	112	0	0	585	606	100	583	594	424
Stage 1	-	-	-	-	-	-	117	117	-	465	465	-
Stage 2	-	-	-	-	-	-	468	489	-	118	129	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1112	-	-	1478	-	-	422	411	956	424	418	630
Stage 1	-	-	-	-	-	-	887	799	-	578	563	-
Stage 2	-	-	-	-	-	-	575	549	-	886	789	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1112	-	-	1478	-	-	396	402	956	409	409	630
Mov Cap-2 Maneuver	-	-	-	-	-	-	396	402	-	409	409	-
Stage 1	-	-	-	-	-	-	881	792	-	570	555	-
Stage 2	-	-	-	-	-	-	546	542	-	869	783	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.59			0.33			11.41			13.33		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	578	1112	-	-	1478	-	-	472				
HCM Lane V/C Ratio	0.028	0.008	-	-	0.014	-	-	0.084				
HCM Control Delay (s/veh)	11.4	8.3	-	-	7.5	-	-	13.3				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3				

Intersection												
Int Delay, s/veh	4.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	146	5	5	111	47	14	29	46	53	22	20
Future Vol, veh/h	40	146	5	5	111	47	14	29	46	53	22	20
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	159	5	5	121	51	15	32	50	58	24	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	172	0	0	164	0	0	389	428	159	393	383	121
Stage 1	-	-	-	-	-	-	246	246	-	132	132	-
Stage 2	-	-	-	-	-	-	143	183	-	261	251	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1405	-	-	1414	-	-	570	519	887	567	551	931
Stage 1	-	-	-	-	-	-	758	703	-	872	787	-
Stage 2	-	-	-	-	-	-	859	749	-	744	699	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1405	-	-	1414	-	-	514	501	887	485	531	931
Mov Cap-2 Maneuver	-	-	-	-	-	-	514	501	-	485	531	-
Stage 1	-	-	-	-	-	-	735	681	-	869	784	-
Stage 2	-	-	-	-	-	-	811	746	-	648	677	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.6			0.23			11.51			13.02		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	650	1405	-	-	1414	-	-	552
HCM Lane V/C Ratio	0.149	0.031	-	-	0.004	-	-	0.187
HCM Control Delay (s/veh)	11.5	7.6	-	-	7.6	-	-	13
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.7

HCM 7th TWSC
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Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	88	13	20	375	24	5	2	8	15	8	14
Future Vol, veh/h	8	88	13	20	375	24	5	2	8	15	8	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	95	14	22	403	26	5	2	9	16	9	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	429	0	0	109	0	0	562	584	95	559	572	403
Stage 1	-	-	-	-	-	-	112	112	-	446	446	-
Stage 2	-	-	-	-	-	-	451	472	-	113	126	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1130	-	-	1482	-	-	437	424	962	440	430	647
Stage 1	-	-	-	-	-	-	893	803	-	591	574	-
Stage 2	-	-	-	-	-	-	588	559	-	892	792	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1130	-	-	1482	-	-	409	414	962	424	421	647
Mov Cap-2 Maneuver	-	-	-	-	-	-	409	414	-	424	421	-
Stage 1	-	-	-	-	-	-	886	797	-	583	566	-
Stage 2	-	-	-	-	-	-	558	551	-	875	786	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.6			0.36			11.26			13.06		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	592	1130	-	-	1482	-	-	487
HCM Lane V/C Ratio	0.027	0.008	-	-	0.015	-	-	0.082
HCM Control Delay (s/veh)	11.3	8.2	-	-	7.5	-	-	13.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

Intersection												
Int Delay, s/veh	4.9											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	40	146	5	5	114	48	14	29	46	54	22	21
Future Vol, veh/h	40	146	5	5	114	48	14	29	46	54	22	21
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	43	159	5	5	124	52	15	32	50	59	24	23

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	176	0	0	164	0	0	392	433	159	396	386	124
Stage 1	-	-	-	-	-	-	246	246	-	135	135	-
Stage 2	-	-	-	-	-	-	147	187	-	261	251	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1400	-	-	1414	-	-	567	516	887	564	548	927
Stage 1	-	-	-	-	-	-	758	703	-	869	785	-
Stage 2	-	-	-	-	-	-	856	745	-	744	699	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1400	-	-	1414	-	-	510	498	887	482	529	927
Mov Cap-2 Maneuver	-	-	-	-	-	-	510	498	-	482	529	-
Stage 1	-	-	-	-	-	-	735	681	-	865	782	-
Stage 2	-	-	-	-	-	-	806	742	-	648	677	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.6			0.23			11.54			13.09		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	647	1400	-	-	1414	-	-	550
HCM Lane V/C Ratio	0.149	0.031	-	-	0.004	-	-	0.192
HCM Control Delay (s/veh)	11.5	7.7	-	-	7.6	-	-	13.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.5	0.1	-	-	0	-	-	0.7

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	88	12	20	376	23	5	2	8	16	8	14
Future Vol, veh/h	8	88	12	20	376	23	5	2	8	16	8	14
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	95	13	22	404	25	5	2	9	17	9	15

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	429	0	0	108	0	0	563	584	95	560	572	404
Stage 1	-	-	-	-	-	-	112	112	-	447	447	-
Stage 2	-	-	-	-	-	-	452	472	-	113	125	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1130	-	-	1483	-	-	437	424	962	439	430	646
Stage 1	-	-	-	-	-	-	893	803	-	591	573	-
Stage 2	-	-	-	-	-	-	587	559	-	892	793	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1130	-	-	1483	-	-	409	414	962	423	421	646
Mov Cap-2 Maneuver	-	-	-	-	-	-	409	414	-	423	421	-
Stage 1	-	-	-	-	-	-	886	797	-	582	565	-
Stage 2	-	-	-	-	-	-	557	551	-	875	787	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.61			0.36			11.26			13.12		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	591	1130	-	-	1483	-	-	484
HCM Lane V/C Ratio	0.027	0.008	-	-	0.014	-	-	0.084
HCM Control Delay (s/veh)	11.3	8.2	-	-	7.5	-	-	13.1
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

HCM 7th TWSC
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Intersection												
Int Delay, s/veh	5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	33	152	5	6	112	53	12	30	59	63	23	17
Future Vol, veh/h	33	152	5	6	112	53	12	30	59	63	23	17
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	36	165	5	7	122	58	13	33	64	68	25	18
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	171	0	0	384	429	165	388	377	122
Stage 1	-	-	-	-	-	-	237	237	-	135	135	-
Stage 2	-	-	-	-	-	-	147	192	-	253	242	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1396	-	-	1407	-	-	574	518	879	571	554	929
Stage 1	-	-	-	-	-	-	766	709	-	869	785	-
Stage 2	-	-	-	-	-	-	855	741	-	751	705	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1396	-	-	1407	-	-	521	503	879	481	538	929
Mov Cap-2 Maneuver	-	-	-	-	-	-	521	503	-	481	538	-
Stage 1	-	-	-	-	-	-	747	691	-	865	781	-
Stage 2	-	-	-	-	-	-	808	738	-	646	687	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.33			0.27			11.38			13.48		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	674	1396	-	-	1407	-	-	536				
HCM Lane V/C Ratio	0.163	0.026	-	-	0.005	-	-	0.209				
HCM Control Delay (s/veh)	11.4	7.6	-	-	7.6	-	-	13.5				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.8				

HCM 7th TWSC
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Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	9	89	13	19	385	24	5	2	7	15	8	15
Future Vol, veh/h	9	89	13	19	385	24	5	2	7	15	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	10	96	14	20	414	26	5	2	8	16	9	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	440	0	0	110	0	0	574	596	96	571	584	414
Stage 1	-	-	-	-	-	-	115	115	-	455	455	-
Stage 2	-	-	-	-	-	-	459	481	-	116	129	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1120	-	-	1481	-	-	430	417	961	432	424	638
Stage 1	-	-	-	-	-	-	890	800	-	585	569	-
Stage 2	-	-	-	-	-	-	582	554	-	889	789	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1120	-	-	1481	-	-	401	408	961	417	414	638
Mov Cap-2 Maneuver	-	-	-	-	-	-	401	408	-	417	414	-
Stage 1	-	-	-	-	-	-	882	793	-	577	561	-
Stage 2	-	-	-	-	-	-	551	546	-	872	783	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v 0.67		0.33	11.51	13.16
HCM LOS			B	B

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	568	1120	-	-	1481	-	-	482
HCM Lane V/C Ratio	0.027	0.009	-	-	0.014	-	-	0.085
HCM Control Delay (s/veh)	11.5	8.2	-	-	7.5	-	-	13.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

Intersection												
Int Delay, s/veh	5.1											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	34	151	5	6	113	52	13	30	58	63	23	18
Future Vol, veh/h	34	151	5	6	113	52	13	30	58	63	23	18
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	37	164	5	7	123	57	14	33	63	68	25	20
Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	179	0	0	170	0	0	386	430	164	390	379	123
Stage 1	-	-	-	-	-	-	238	238	-	136	136	-
Stage 2	-	-	-	-	-	-	148	192	-	254	243	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1396	-	-	1408	-	-	572	517	880	569	553	928
Stage 1	-	-	-	-	-	-	765	708	-	867	784	-
Stage 2	-	-	-	-	-	-	854	741	-	750	704	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1396	-	-	1408	-	-	518	501	880	479	536	928
Mov Cap-2 Maneuver	-	-	-	-	-	-	518	501	-	479	536	-
Stage 1	-	-	-	-	-	-	745	690	-	863	780	-
Stage 2	-	-	-	-	-	-	806	738	-	646	686	-
Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	1.37			0.27			11.43			13.49		
HCM LOS							B			B		
Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1				
Capacity (veh/h)	670	1396	-	-	1408	-	-	537				
HCM Lane V/C Ratio	0.164	0.026	-	-	0.005	-	-	0.211				
HCM Control Delay (s/veh)	11.4	7.6	-	-	7.6	-	-	13.5				
HCM Lane LOS	B	A	-	-	A	-	-	B				
HCM 95th %tile Q(veh)	0.6	0.1	-	-	0	-	-	0.8				

Intersection												
Int Delay, s/veh	1.5											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	8	89	12	19	384	23	6	2	8	16	8	15
Future Vol, veh/h	8	89	12	19	384	23	6	2	8	16	8	15
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	100	-	180	195	-	170	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	96	13	20	413	25	6	2	9	17	9	16

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	438	0	0	109	0	0	571	591	96	568	580	413
Stage 1	-	-	-	-	-	-	113	113	-	454	454	-
Stage 2	-	-	-	-	-	-	458	478	-	114	126	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1122	-	-	1482	-	-	432	419	961	434	426	639
Stage 1	-	-	-	-	-	-	892	802	-	586	569	-
Stage 2	-	-	-	-	-	-	583	555	-	891	792	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1122	-	-	1482	-	-	403	410	961	419	417	639
Mov Cap-2 Maneuver	-	-	-	-	-	-	403	410	-	419	417	-
Stage 1	-	-	-	-	-	-	885	796	-	578	562	-
Stage 2	-	-	-	-	-	-	552	548	-	874	786	-

Approach	EB			WB			NB			SB		
HCM Control Delay, s/v	0.6			0.33			11.51			13.18		
HCM LOS							B			B		

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	570	1122	-	-	1482	-	-	482
HCM Lane V/C Ratio	0.03	0.008	-	-	0.014	-	-	0.087
HCM Control Delay (s/veh)	11.5	8.2	-	-	7.5	-	-	13.2
HCM Lane LOS	B	A	-	-	A	-	-	B
HCM 95th %tile Q(veh)	0.1	0	-	-	0	-	-	0.3

APPENDIX F

OCTA AND IRVINE CONNECT BUS INFORMATION

North County System Map



- 1

Local Routes (1-99)

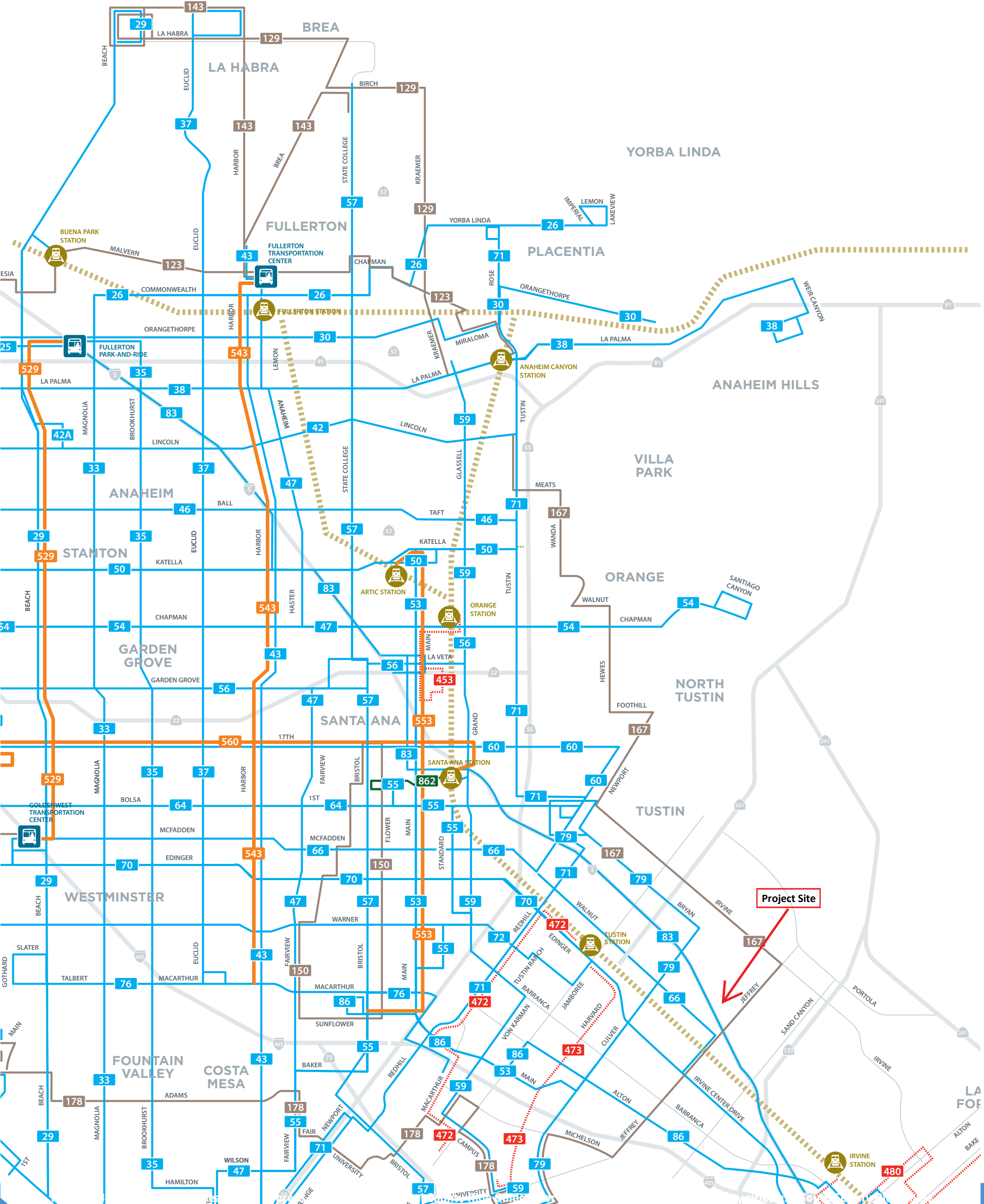
100

Community Routes (100-199)
- 400

Metrolink Stationlink Routes (400-499)
Weekday Rush Hour Only
- 500

OC Bus Rapid Limited Stop Service (500-599)
- 800

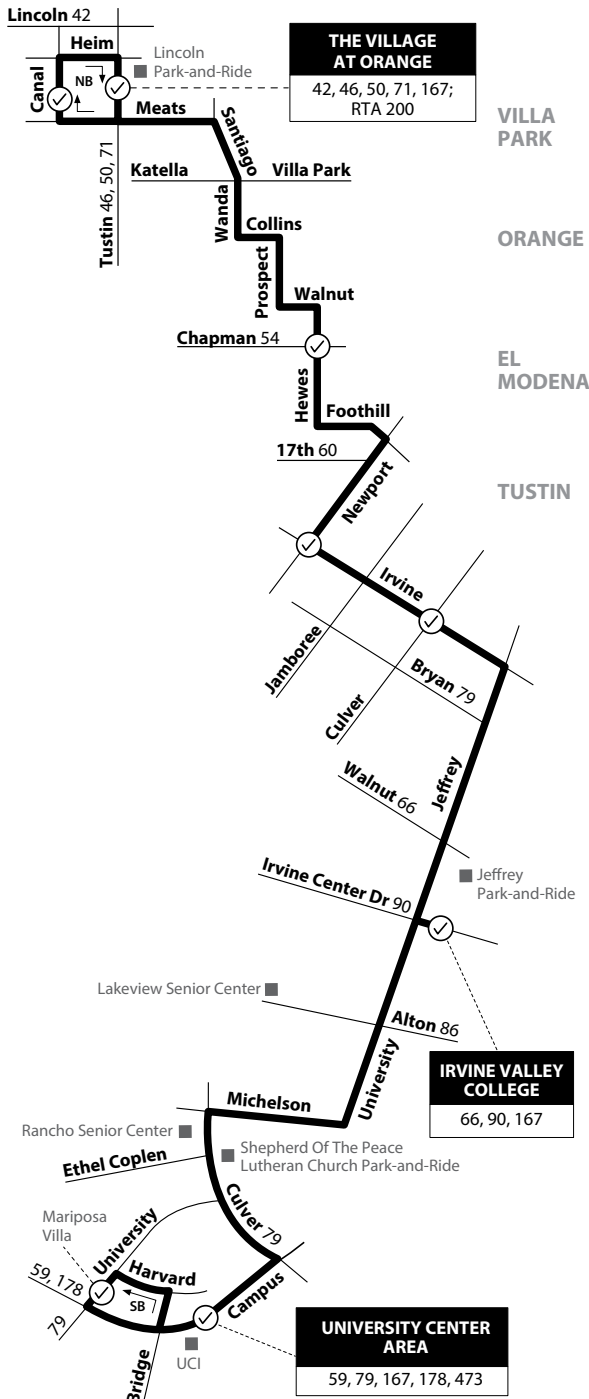
City Shuttle

Rail StationsOC Bus Transit Centers

NOTE: No weekend service.
NOTA: No hay servicio los fines de semana.

Orange to Irvine
via Hewes St / Irvine Blvd / Jeffrey Rd

167



Monday - Friday
NORTHBOUND To: Orange

Mariposa Villa	University Center	Irvine Valley College	Irvine & Culver	Newport & Old Irvine	Hewes & Chapman	Canal & Meats
5:18	5:20	5:37	5:50	5:59	6:08	6:24
6:13	6:15	6:32	6:45	6:54	7:03	7:19
6:57	7:00	7:23	7:40	7:54	8:07	8:25
7:52	7:56	8:20	8:35	8:46	8:58	9:17
8:47	8:51	9:15	9:30	9:41	9:53	10:12
9:41	9:45	10:10	10:25	10:35	10:45	11:01
10:38	10:42	11:05	11:20	11:31	11:42	12:02
11:33	11:37	12:00	12:15	12:26	12:37	12:57
12:17	12:21	12:47	1:07	1:23	1:35	1:55
1:09	1:14	1:44	2:05	2:16	2:23	2:43
2:23	2:28	2:53	3:11	3:24	3:35	3:53
3:18	3:23	3:48	4:06	4:19	4:30	4:48
4:03	4:08	4:36	5:01	5:15	5:27	5:46
5:04	5:08	5:36	5:56	6:07	6:18	6:36
5:59	6:03	6:31	6:51	7:02	7:13	7:31
7:06	7:10	7:35	7:51	8:00	8:10	8:25
8:06	8:10	8:35	8:51	9:00	9:10	9:25
9:06	9:10	9:35	9:51	10:00	10:10	10:25
10:06	10:10	10:35	10:51	11:00	11:10	11:25

Monday - Friday

SOUTHBOUND To: Irvine

Canal & Meats	Village At Orange	Hewes & Chapman	Irvine & Newport	Irvine & Culver	Irvine Valley College	University Center	Mariposa Villa
5:08	5:11	5:25	5:36	5:45	6:00	6:22	6:26
5:51	5:55	6:13	6:28	6:40	7:00	7:27	7:32
6:46	6:50	7:08	7:23	7:35	7:55	8:22	8:27
7:46	7:49	8:05	8:18	8:30	8:47	9:15	9:20
8:41	8:44	9:00	9:13	9:25	9:42	10:10	10:15
9:36	9:39	9:55	10:08	10:20	10:37	11:05	11:10
10:31	10:34	10:50	11:03	11:15	11:32	12:00	12:05
11:23	11:27	11:44	11:58	12:10	12:28	12:52	12:58
12:18	12:22	12:39	12:53	1:05	1:23	1:47	1:53
1:08	1:12	1:32	1:48	2:00	2:18	2:43	2:48
2:05	2:09	2:28	2:43	2:55	3:11	3:37	3:44
3:15	3:18	3:36	3:49	4:01	4:17	4:42	4:45
4:14	4:18	4:35	4:49	5:01	5:17	5:43	5:49
5:14	5:18	5:35	5:49	6:01	6:17	6:43	6:49
6:20	6:23	6:38	6:51	7:01	7:15	7:40	7:43
7:20	7:23	7:38	7:51	8:01	8:15	8:40	8:43
8:20	8:23	8:38	8:51	9:01	9:15	9:40	9:43
9:20	9:23	9:38	9:51	10:01	10:15	10:40	10:43

Route Map



APPENDIX G

VMT WORKSHEET

ITAM PROJECT VMT SUMMARY REPORT

V 1.8-080824

	PROJECT INFORMATION	Project #:	1
		Name:	Our Lady of Peace
		Description:	68 multi-family residential dwelling units
		Type:	Residential
Project Vehicle Miles Travelled (VMT)	ORANGE COUNTY	Total	4,458
		Residential	4,010
		Non-Residential	448
		Population	160
Project Population and Employment		Employment	-
		Other VMT Contributor ³	25
		Project VMT Rate	Residential
VMT Rate Threshold Goal		Non-Residential	
		Residential	14.88
		Non-Residential	41.36
		Applicable Measure(s)	21.67
		Threshold Goal	14.88
		Net VMT Rate Percentage Increase ¹	31.33%
		Significant VMT Impact?	Yes

MITIGATION MEASURES

On-Site	☒	2.5%
Off-Site	☐	5.0%
Additional Mitigation ²	☐	
Significant VMT Impact Mitigated?	28.8%	NO

Notes:

1- For Mixed-Use projects, the "Net VMT Rate Percentage Increase" is based on the higher of Residential or Non-Residential VMT rate.

2- Sufficient justification must be provided to support additional mitigation.

3- Refer to City of Irvine VMT Guidelines for the application of other VMT contributors.